Range Riders

Adventures with numbers

Level 4 Arithmetic

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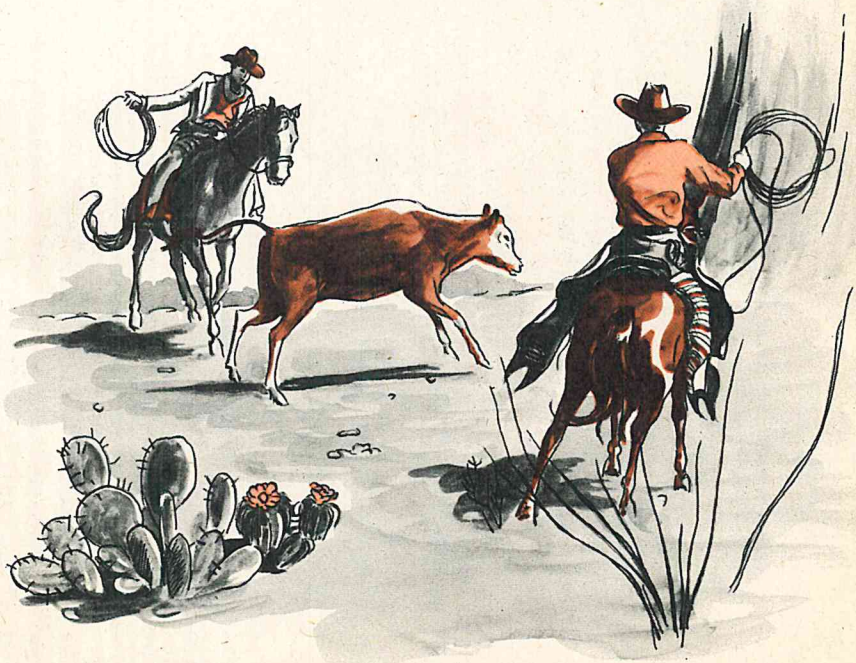

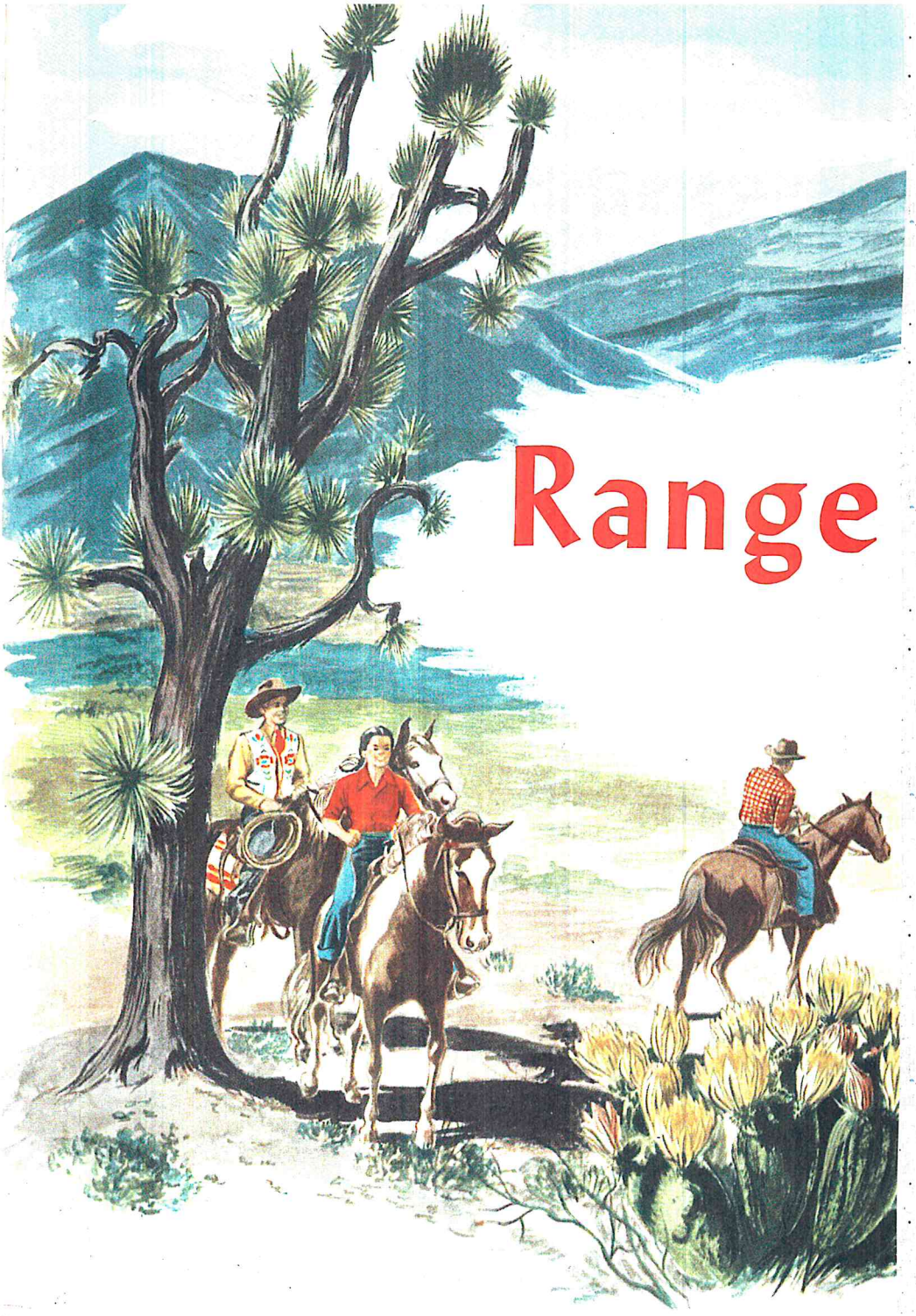
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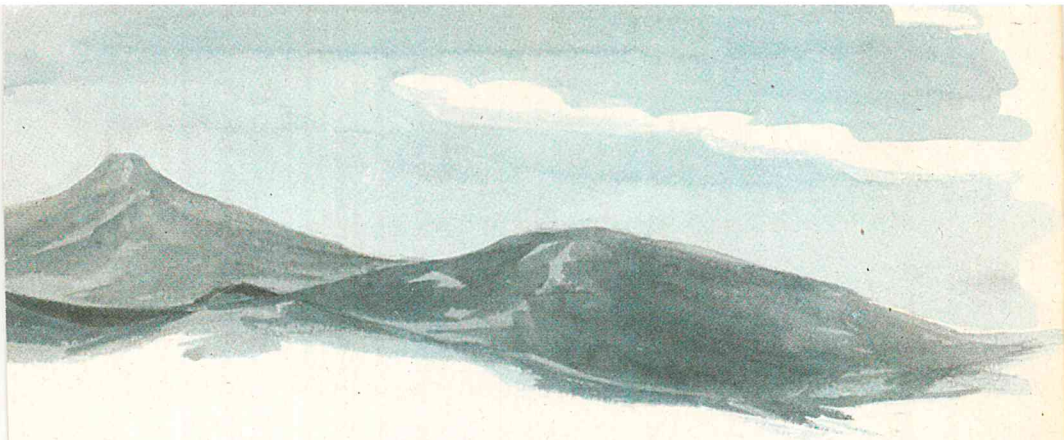

Riders

Adventures with numbers

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★ ★ ★ ★

Webster Publishing Company

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Adventures with numbers

IN ORDER OF INCREASING DIFFICULTY

BUSY BEAVERS
RANGE RIDERS
STRAIGHT SHOOTERS
AIRPLANE ACES
HOME RUN HITTERS
CAGE CHAMPIONS

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★ Preface

Plan of Series. Adventures with Numbers is unique in organization. Each book has a motif taken from the pupils' world and captivating to the pupil. The motif furnishes the book's title. Young learners assume the role of Busy Beavers or Range Riders as they experience adventures with numbers. The boy or girl who is a little older plays that he is on the rifle range or piloting a plane as he gains further skill and understanding. The upper grade pupil takes part in a make-believe ball game, the rules and the scores of which provide motivation and sliding measures of achievement. Emphasis is placed on crediting the pupil with what he does correctly, without undermining his confidence when he fails to make a perfect total score, or the hypothetical 100%.

Unit Organization. Each book is divided into twelve units, each unit a little book in itself, with presentation of new material, practice in computation, and helps in problem solving. Pages of races, drills, and problems, with like captions and illustrations, occur in each unit of a book. The four closing pages of a unit are:

a. Test on material of unit, with a goal.

b. Helps for those who failed to reach goal a.

c. Challenges for those who did reach goal a.

d. Final unit test, geared to average pupil.

The first and seventh units of each book are given largely to reviewing and reteaching. Thus, twice a year, there are systematic campaigns to strengthen foundations so that the pupil can go into new work with new confidence, even though there have been gaps in his earlier work.

Non-Discriminating Differentials. Careful provisions are made for pupils with different learning rates. This is done in such a way as not to foster a superior attitude on the part of the fast learner nor to embarrass the one who learns slowly. Among the beavers, one who mends the wall can take as much pride in his work as the one who builds it higher. In basketball, one who recovers the ball is as valuable to the team as one who passes the ball. There is no higher nor lower with the pupil who does his best with the work that is appropriate for him. In Adventures with Numbers, there is differentiation without discrimination.

Individualized Program. Directions are addressed to pupils. Pupils are asked to choose partners, or to divide into groups or teams to do specific tasks.

They mark each other's papers and go on to the next task. This builds up a feeling of responsibility on the part of the pupil, and helps to release the teacher from constant direction of the class so that she can give help where it is most needed. The range between the slow learner and the fast learner in the average class is great. This series provides material and a plan so that the teacher can guide each pupil along at his own rate, rather than merely "covering" the material judged appropriate for the average pupil.

Readiness. Experience and experiments show that pupils do not become ready of themselves. We also know that teaching is wasted when the pupil is not ready. A program of preparing the pupil for each next step is skillfully woven into Adventures with Numbers. The «times-and» facts precede carrying in multiplication; station numbers precede uneven division. A boy's bicycle repair shop grows into a partnership and into a small corporation before stocks and bonds are presented. No process or idea is introduced until the pupil has been conditioned for it.

Presentation of New Concepts. Meanings, skills, and processes that are most difficult for the child to grasp are usually the ones that are most difficult to present clearly in a text. An author is tempted to be satisfied with something that he knows is inadequate, and to hope that teacher and pupil can fill in what is lacking. In Adventures with Numbers, no effort has been spared to present each new idea clearly and adequately. A pupil is not stopped today by the height of the ultimate goal in arithmetic, but by some little point in today's lesson that is not clear to him. Our presentations make the steps short and leave no gaps.

Using Arithmetic. A pupil may excel in book computation or book problems, and fail to see that the purpose of what he learns in school is to help him outside of school. He fails to carry what he learns in the little world within the school to the big world on the outside. Adventures with Numbers guides the pupil to the use of arithmetic in his everyday affairs, and helps him see arithmetic as a part of his whole self and not just a part of his school self.

Importance of Arithmetic. Quantitative thinking plays a more decisive role in our age than ever before. This is an age of number, measurement, science, and technology. The pupil who leaves school deficient in arithmetic is blocked from entering many fields. He will be handicapped in his efforts to earn a good living, or to buy most with what he does earn. For the individual who will carry his load and for the nation, arithmetic is truly an important part of the education for survival.

★ ★ ★ ★ Contents

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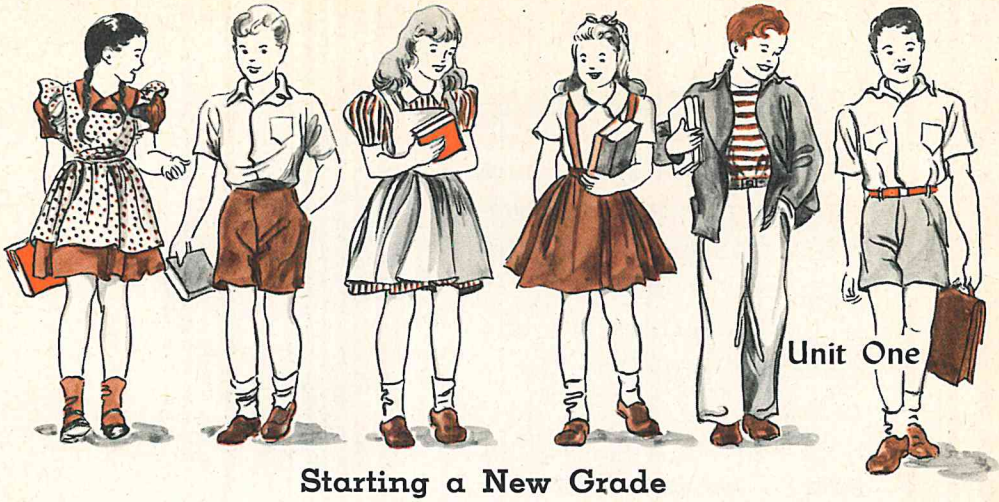


Unit One

Starting a New Grade

One! Two! Three! Ready. Go!

Go where? Why, into a new grade, of course.

Would you like a good start? Everyone does who wants to win. This unit will give you a good start in this year's arithmetic.

Can you read big numbers? That will be our first work.

Let us read these numbers:

100	200	300	400	500
600	700	800	900	1000

What did you call that last number? Did anyone call it **ten hundred?** It is ten hundred, but it has another name. The other name is **one thousand.** It is usually written 1,000. See the comma in this number? The three zeros on the right tell that it is thousands. The figure on the left of the comma always tells how many thousands.

Think the number before the comma and read:

2,000 5,000 3,000 19,000 36,000

More About Thousands

The newspaper said that Singapore is a large city which is 12,000 miles from New York.

"Is the distance exactly 12,000 miles?" Jerry asked.

"Probably not," Father said. "Let us look in your geography. I will write the exact number for you."

Father wrote, "12,355 miles."

Put your finger on the comma in this number. On which side of the comma is the number of thousands written? How many thousands are there?

How do you read 355?

You read the whole number as **twelve thousand three hundred fifty-five.**

How many thousands are there in the number 7,946? Read the rest of the number. Read the whole number.

These are distances between cities. Read the numbers. Try to find the cities on a map.

Portland, Oregon, to Memphis, Tennessee	2,558 miles
St. Louis, Missouri, to Boston, Massachusetts	1,193 miles
Chicago, Illinois, to El Paso, Texas	1,522 miles
Philadelphia, Pennsylvania, to London, England	4,012 miles

More Big Numbers from Geography

Your geography is filled with big numbers: distances, heights of mountains, lengths of rivers, areas, populations, and goods produced. Read these big numbers that I found in a geography.

1. It is about 25,000 miles around the earth at the equator.

2. The distance through the earth is about 8,000 miles.

3. The deepest place yet found in the ocean is 35,400 feet deep.

4. The highest mountain peak is 29,141 feet high.

5. There are many long rivers in our country. Here are some of the longest.

Missouri	2,945 miles	Mississippi	2,486 miles
Arkansas	1,460 miles	Colorado	2,000 miles
Rio Grande	1,650 miles	Ohio	1,283 miles

Look in your geography for five-figure numbers or four-figure numbers. Read to the class the interesting fact that each of these big numbers tells.

Newspapers and magazines also use big numbers.

6. There are 2,783 diamonds and 277 pearls in the crown of the King of England.

7. In one year, 32,100 persons were killed in the United States in motor accidents.

8. A flier paid $85,650 for a new plane.

9. A whale shark that weighed 26,594 pounds was caught June 1, 1912, near the coast of Florida.

Short Ways of Saying Long Numbers

There are short ways to read telephone numbers, street numbers, and dates.

If Albert's telephone number were Grand 3997, he would say, "My number is Grand three-nine-nine-seven."

In saying telephone numbers, you say "oh" for 0 (zero).

Read these telephone numbers:

Garfield	7561	Plum	5870
North	4893	Central	4052
Lake	7041	Kenwood	9020

If James lived at 4867 Monroe Street, he could say, "I live at four-eight-six-seven Monroe," or he could say, "I live at forty-eight sixty-seven Monroe."

Read these addresses in two ways:

2852 Pine Street	8975 Rogers Avenue
7140 Locust Street	3080 Evans Lane
3966 Olive Street	5130 Tyler Place

If George Washington were here to talk, he would say, "I was born in seventeen thirty-two." Read each of these the short way:

George Washington died in 1799.

Columbus discovered America in 1492.

The First World War began in 1914 and ended in 1918.

Bring to class a telephone number and a street address. Ask the class to read these numbers.

Writing Big Numbers

In arithmetic, you read 85,798 as **eighty-five thousand seven hundred ninety-eight.** It is a five-figure or five-place number. Each place has a name. Beginning at the right, the first place is **units** or **ones,** for it tells how many ones in the number. The next place is **tens,** for it tells how many tens in the number. Give the name of each of the other places and tell why it is named as it is.

Ten thousands	*Thousands*		*Hundreds*	*Tens*	*Ones or Units*
8	5	,	7	9	8

1. Read the numbers below, and answer these questions for each of them. What figure is in ones place? In tens place? In hundreds place? In thousands place? In ten thousands place?

8,327 32,458 4,218 85,169 12,943 16,375

2. Write the numbers below in figures.

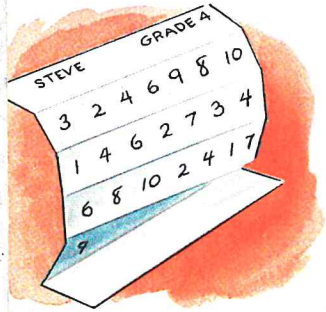
Eight thousand three hundred fifty-five
Four thousand six hundred thirty
Twelve thousand three hundred four
Twenty-five thousand six hundred
Thirty-seven thousand three

"Units" is another name for ones. Ones are important, for all numbers are made up of ones.

Forty Easy Addition Facts

The answer to an addition example is the sum. The example, including the sum, is an addition fact. Study the examples below. Say the sums quickly.

A	2	5	5	4	2	1	7	8	6	3
	2	5	1	3	1	3	2	2	3	3
B	1	3	8	7	5	5	1	3	4	9
	4	2	1	1	4	2	6	1	2	1
C	4	1	1	6	6	2	2	5	4	1
	1	5	9	2	1	3	5	3	4	8
D	3	2	1	4	2	2	1	2	3	3
	6	7	2	5	8	6	7	4	4	5



It would take too much time to copy all the numbers you will have to add in fourth-grade arithmetic. You will learn to use the "folded-paper" way and save time.

Fold the paper as shown in the picture. Put the first fold under the first row and write the answers. Fold this row of answers under, write the next row of answers, and so on until you finish. Write the sums of rows A, B, C, and D above.

"Oh! Be careful!" It was the poor book that said that. Do not write on this page, or any page. Use folded paper instead.

Adding Larger Numbers

Write these sums on folded paper:

1.	254	217	863	513	387	551
	213	132	233	542	211	426
	467	349	1,096	1,055	598	977
2.	943	114	662	254	145	371
	121	951	213	534	843	622
	1,064	1,065	875	788	988	993
3.	224	123	581	476	152	644
	865	744	112	312	323	324
	1,089	867	693	788	475	968

Jack was having fun planning trips from a travel book. He found that it is 225 miles to his grandmother's by automobile and 212 miles by train. How far would he travel if he went to his grandmother's in an automobile and came back on the train?

225 miles
212 miles
437 miles

He found 437 miles for the answer. Do you think this is correct?

Find the answers to these travel problems:

4. Jack found that it was 324 miles by train to his uncle's home. How far would he travel if he went on the train and came back on the train?

5. Jack found that the automobile distance from Washington to New York is 228 miles and the distance from New York to Detroit is 631 miles. How many miles would one travel in going from Washington to New York and from there to Detroit?

Forty More Addition Facts

Add quickly. Write the sums on folded paper.

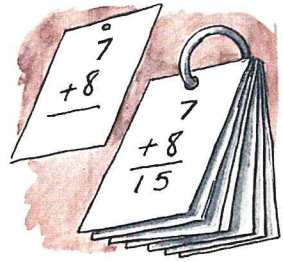
A	9	4	7	2	8	9	6	4	3	7
	2	8	9	9	3	9	7	7	9	7
B	5	3	4	9	6	8	5	7	4	3
	7	8	9	8	8	4	9	5	6	7
C	7	9	8	7	8	9	8	9	8	7
	8	5	5	4	6	3	8	6	9	3
D	5	9	6	9	7	6	5	8	6	6
	6	4	6	7	6	9	8	7	0	5

If some addition facts are hard for you, you will need to do extra work to learn them. Helper cards will help you.

The numbers to be added, without the answer, are written on the front of the card. The numbers to be added and the answer are written on the back. You should make a helper card for each addition fact that is hard for you.

Front	*Back*
6	6
+9	+9
15	15

Helper cards may be put on a notebook ring to form a merry-go-round. This makes the helper cards easy to use and keeps them from getting lost.



Using Addition in Problems

1. If 6 children were absent yesterday and 8 are absent today, how many have been absent in all?

2. If 7 children were absent yesterday and 0 are absent today, how many have been absent in all?

3. Make up a good rule for finding the sum when you add 0 to any number. Give an example.

4. If 0 children are absent today and 9 were absent yesterday, how many have been absent in all?

5. Make up a good rule for finding the sum when you add any number to 0. Give an example.

Write these sums on folded paper.

6.	643	716	965	832	392	756
	824	432	624	956	806	632
7.	300	504	950	606	574	321
	220	762	640	803	925	751

8. Ruth's teacher keeps the attendance record in her school. One day there were 724 present on the first floor and 643 present on the second floor. How many were there on the two floors?

9. On that day there were 666 boys and 701 girls in school. How many were there of both boys and girls?

10. If there are 215 enrolled in the fourth grade and 173 enrolled in the fifth grade, how many are there in both grades?

The 100 Addition Facts

You should be able to say the sums below in three minutes, or write them on folded paper in five minutes. Play fair!

1.	3	3	6	0	2	1	2	0	8	2
	1	3	1	7	1	1	0	0	1	2
2.	0	1	0	1	6	1	0	1	0	1
	3	0	9	8	0	6	4	5	2	9
3.	4	3	7	5	5	0	1	9	3	7
	3	6	1	5	4	1	7	1	0	0
4.	0	1	4	9	2	5	2	3	6	1
	8	4	4	0	9	1	5	2	2	3
5.	2	4	8	4	5	4	0	7	4	8
	4	5	0	2	0	0	5	7	1	8
6.	2	8	2	1	0	3	7	5	9	8
	6	3	3	2	6	7	2	2	2	2
7.	7	3	4	6	9	6	3	6	9	5
	3	4	8	5	4	6	9	4	9	6
8.	3	2	6	9	6	8	7	5	7	4
	5	8	7	3	3	9	6	3	4	9
9.	3	2	9	7	8	6	7	6	5	9
	8	7	7	5	4	9	8	8	7	6
10.	4	8	7	8	4	9	5	9	5	8
	6	7	9	6	7	8	8	5	9	5

Adding More Than Two Numbers

Miss Adams needed some small boxes. John brought 7, Jane brought 4, Mary brought 6, and Tom brought 9. How many boxes did the four children bring?

Write the numbers in a column. Add down. Think 7 and 4 are 11, 11 and 6 are 17, 17 and 9 are 26. Write **26** under the column as the sum.

Add		Check	
7	Think	7	26
4	11	4	19
6	17	6	15
9	26	9	Think
26		26	

To check, begin at the bottom and add up. Think 9 and 6 are 15, 15 and 4 are 19, 19 and 7 are 26. The example checks when the number found by adding up is the same as that found by adding down.

1. The class divided itself into four teams for a spelling contest. The Reds missed 8 words, the Blues 6 words, the Greens 3 words, and the Yellows 9 words. How many words were missed in all?

2. Find the sum of: 7, 5, 6, 8.

Adding by Endings and Column Addition

In adding columns, you must add one-place numbers to two-place numbers. The practice below will help you to add columns quickly.

Say these sums as fast as you can.

1.	13 and 4	17 and 2	14 and 5	13 and 0
2.	10 and 7	11 and 1	10 and 9	13 and 6
3.	13 and 3	17 and 4	14 and 2	12 and 7
4.	13 and 2	14 and 2	16 and 3	12 and 5
5.	12 and 4	14 and 3	15 and 2	16 and 1
6.	10 and 8	12 and 6	12 and 4	12 and 2
7.	12 and 1	13 and 5	15 and 1	16 and 2
8.	23 and 4	25 and 4	32 and 6	33 and 5

Add down. Write the sums on folded paper. Check by adding up.

9.	5	7	9	4	9	2	7	4	3	3
	8	6	2	3	0	4	7	5	0	5
	4	0	1	7	5	6	2	5	4	7
	2	4	7	6	7	3	3	2	0	6

10.	4	2	7	1	6	4	6	1	3	4
	2	0	2	9	3	1	0	0	1	2
	8	5	0	7	1	2	6	6	8	7
	7	3	4	0	8	9	2	6	7	5
	4	7	6	5	4	7	6	5	4	3

Harder Adding by Endings

When you add 3 to any number ending in 4, the sum ends in **7**. The figure in tens place of the sum is the same as the figure in tens place of the number.

14	24	34	54
3	3	3	3
17	27	37	57

When you add 9 to a number ending in 6, the sum ends in **5**. The figure in tens place of the sum is 1 greater than the figure in tens place of the number.

The Ending Changes and The Figure in Tens Place is Increased by 1.

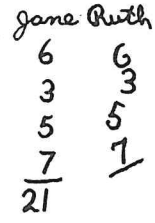
26	46	66	86
9	9	9	9
35	55	75	95

Say these sums as fast as you can. Watch for endings and watch for the figure in tens place.

1.	21 and 3	24 and 4	27 and 3	28 and 3
2.	30 and 5	32 and 4	35 and 6	36 and 5
3.	40 and 7	42 and 1	45 and 5	48 and 6
4.	49 and 6	54 and 2	56 and 6	63 and 4
5.	64 and 7	72 and 8	81 and 6	28 and 7
6.	21 and 6	24 and 5	27 and 8	32 and 7
7.	35 and 5	36 and 8	40 and 6	42 and 5
8.	29 and 2	83 and 9	44 and 7	59 and 4
9.	57 and 6	69 and 3	66 and 5	68 and 4
10.	79 and 9	54 and 8	78 and 5	88 and 7
11.	29 and 5	26 and 4	86 and 9	83 and 8
12.	26 and 8	39 and 6	44 and 8	56 and 7
13.	72 and 9	91 and 6	83 and 9	73 and 8
14.	58 and 5	67 and 9	26 and 2	35 and 9
15.	48 and 4	65 and 8	77 and 9	69 and 1

Careful Children Get the Right Answers

Jane is careful to write each figure neatly and to write figures in a straight column. It is easy for her to add and to check.



Ruth does not write her figures neatly, nor does she write them in a straight column. Her answers are usually wrong.

Write these numbers neatly in straight columns and add.

1.	3, 7, 2, 9	4, 0, 5, 6	6, 5, 8, 4, 2
2.	2, 1, 3, 9	7, 6, 7, 4	5, 9, 6, 8, 3
3.	7, 6, 4, 7	9, 0, 8, 9	1, 9, 3, 8, 5
4.	5, 6, 2, 9	8, 7, 3, 6	2, 0, 4, 7, 5

Here are the prices of some things children buy.

marble	1¢	candy bar	5¢
top	2¢	tablet	6¢
pencil	3¢	ball	7¢
eraser	4¢	kite	8¢
ice cream	5¢	doll	9¢

These are the things some children bought. Find how much each child had to pay. Copy the prices neatly in straight columns and add.

Bill	Dora	Paul	Nell	Tom
ball	marble	eraser	tablet	pencil
top	tablet	candy bar	doll	eraser
pencil	doll	pencil	kite	tablet
eraser	ice cream	top	marble	ball

Practice Makes Perfect

Add down. Write the sums on folded paper. Check by adding up.

1.

2	8	2	5	7	3	8	4	5	6
4	5	7	4	8	0	9	3	7	8
0	3	6	8	6	5	6	7	3	0
6	4	6	9	4	7	2	2	4	9

2.

5	8	1	7	3	2	4	1	2	7
2	0	9	1	4	8	6	3	0	0
7	4	4	1	6	3	8	5	4	4
3	2	6	2	1	7	2	6	5	8
1	3	7	3	4	6	1	7	2	3

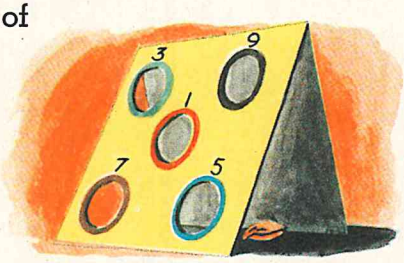
Copy neatly in straight columns and add.

3. 7, 6, 0, 4 9, 0, 8, 6, 5 4, 2, 6, 3, 1

4. 2, 4, 7, 3 5, 0, 4, 5, 7 7, 7, 3, 2, 5

5. Playing bean bag is fun and is good practice in adding. Each child gets five throws. These are the scores that some of the children made.

Jack	5, 3, 0, 9, 7
Ted	1, 5, 7, 3, 9
Joan	1, 1, 9, 0, 3
Bob	9, 7, 7, 9, 5



Copy the figures of each score neatly in straight columns and add. Which child made the highest score?

Helping Our Friend by Adding Two-Figure Numbers

Mrs. Green keeps a little store near school. She sells us many things we need. One day she asked Alice and Bob to help her count the things in her store. Here are some of the two-figure numbers they had to add.

1. There were 54 red notebooks and 29 blue ones. How many notebooks were there?

Tens	Ones
5	4
2	9
8	3

Write the numbers to be added one under the other. Add the figures in ones place: 4 and 9 are 13, which is 1 ten and 3 ones. Write the **3** under the 9 and carry the 1. To carry means to hold a figure in mind and to add it in the next place. In tens place, think 1 and 5 are 6, and 6 and 2 are 8. Write the **8** under the 2. The sum is 83.

2. Help Alice and Bob add these and get the right answers.

Pencils	Crayons	Erasers	Bags of Marbles
45 red	54 yellow	34 round	48 large
28 green	19 blue	37 square	26 small

3. Mrs. Green had 16 chocolate bars, 14 peanut bars, and 21 coconut bars. How many candy bars did she have?

4. There were 16 arithmetics, 25 spellers, and 24 readers on the shelves. How many books were there?

5. There were 25 cowboy magazines, 16 baseball magazines, and 23 comics on the magazine rack. How many magazines were there in all?

6. Mrs. Green had sold 23 pencils on Monday, 24 on Tuesday, 31 on Wednesday, and 45 on Thursday. How many did she sell in the four days?

Write the sums on folded paper.

7.

32	25	72	22	34	53	85	27
46	30	33	41	83	44	31	50
21	43	54	63	42	20	62	32

8.

28	72	93	76	28	35	97	76
33	85	46	57	39	44	22	21
46	67	23	32	43	78	38	98
45	93	37	22	71	58	14	67

Our Adding Is Growing

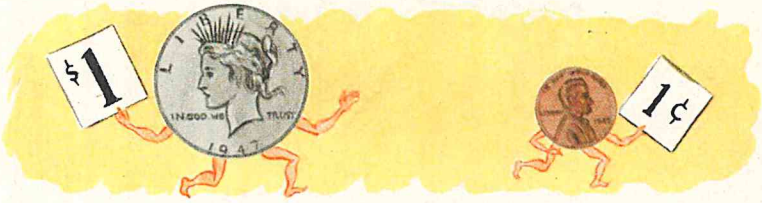
Father has to add three-figure numbers in his work. Here is an example he had to do.

$$\begin{array}{r} 456 \\ 285 \\ 198 \\ 584 \\ \hline 1523 \end{array}$$

Add the ones column down. The sum is 23, which is 2 tens and 3 ones. Write the **3** under the ones column, and carry the 2. In the tens column, think 2 and 5 are 7, 7 and 8 are 15, 15 and 9 are 24, 24 and 8 are 32. Write the **2** under the tens column and carry the 3. In the hundreds column, think 3 and 4 are 7, 7 and 2 are 9, 9 and 1 are 10, 10 and 5 are 15. Write the **15** as shown.

Add down. Check by adding up. Write the sums on folded paper.

1.	762	324	372	134	328	407
	835	132	143	372	247	638
	201	513	251	861	129	836
2.	784	84	4	625	721	904
	67	375	867	9	105	37
	8	12	28	36	39	13
3.	436	135	549	984	438	447
	243	746	317	619	75	967
	634	270	463	86	6	349
	919	58	754	332	282	280



Dollars and Cents

You write five dollars and thirty-five cents as $5.35.

You read $9.76 as nine dollars and seventy-six cents.

In writing dollars and cents in figures, always put a dollar sign before the number of dollars and a cents point between the number of dollars and the number of cents. You read the cents point as **and.**

The Jones family spent $9.63 for groceries, $3.45 for meat, $3.80 for milk, and $0.98 for bread. How much did they spend in all?

Copy the numbers to be added under each other so that the cents points are in a straight column. Write the dollar sign before the top number to be added and before the sum. The cents point of the sum is in the same column as the cents points of the numbers added.

$9.63
3.45
3.80
0.98
$17.86

Add and check.

1.	2.	3.	4.	5.
$7.63	$9.75	$1.12	$4.70	$3.20
.65	1.15	4.00	.98	.08
3.25	5.10	2.11	4.75	2.19
2.00	.76	.84	.65	1.25

Here They Go to Rainbow Ranch

1. Mr. Brown took Jack and Ann to visit Rainbow Ranch. He drove 208 miles the first day and 321 miles the second. How far away was Rainbow Ranch?

2. Jack paid $.38 for his breakfast, $.60 for his lunch, and $1.25 for his dinner. How much did he spend for his meals that day?

3. The second day they were traveling Ann bought a book for $.60, a candy bar for $.05, and a cowgirl hat for $3.75. How much did she spend in all?

4. On a hilly farm Jack saw 32 sheep, 26 cows, 6 goats, and 37 horses. How many animals did he see on this farm?

5. When they stopped at the filling station, the station man said that a near-by ranch had thirty-seven thousand six hundred head of cattle. Can you write this number in figures? What do we mean by "head of cattle"?

6. Mr. Brown paid the filling station man $2.75 for gasoline, $1.19 for changing the oil in the car, $.50 for repairing a tire, and $2.75 for some repairs on the car. What was the amount of this bill?

Write the sums.

7.

$.26	65	30	704	330	$7.00	$3.06
.08	10	16	173	15	1.05	4.38
.43	20	50	97	100	.95	.65
.09	4	32	8	7	.45	.09

Signs and Terms Used in Arithmetic

The Plus Sign	The Minus Sign	The Equals Sign
+	−	=
This sign means ADD It is read **and** or **plus.**	This sign means SUBTRACT It is read **from** or **minus.**	This sign means EQUALS It is read **is, are, equals,** or **is equal to.**

You may read 5+3=8 as 5 and 3 are 8, or as 5 plus 3 equals 8.

You may read 8−3=5 as 3 from 8 is 5, or as 8 minus 3 equals 5.

Read each of these in two ways.

1.	3+4=7	5+9=14	8−2=6
2.	6+2=8	7+8=15	7−4=3
3.	15−7=8	14−9= 5	13−7=6

In an addition example the answer is called the **sum.**

Addition Example

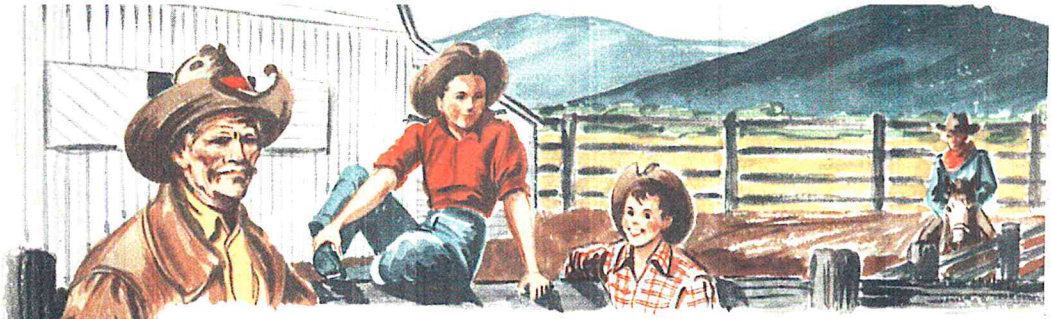
631
476
359
107

1573 ←*sum*

In a subtraction example the answer is called the **remainder** or **difference.**

Subtraction Example

385
162
---
223 ←*remainder or difference*



Jack and Ann Become Cow Hands

Uncle Shorty is teaching Jack and Ann to be good cow hands on Rainbow Ranch. What fun they are having! Would you not like to be with them at the round-up?

We can have fun right here in arithmetic. At the end of each unit, we can play that you are Jack and Ann. The round-up will be all the work of the unit.

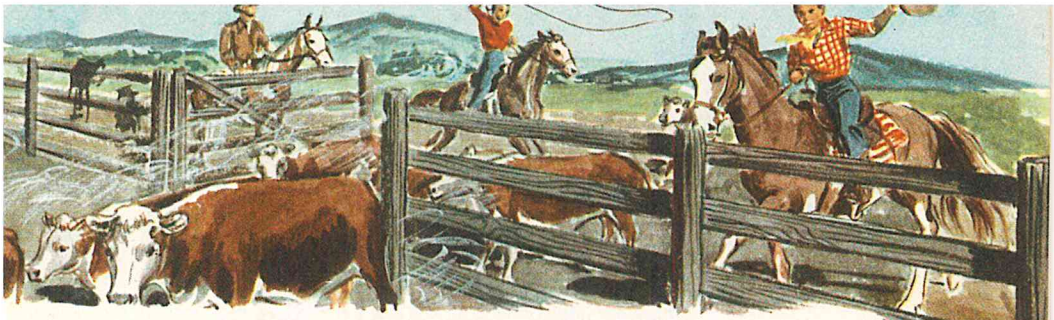
So come on, cowboys and cowgirls, too. It is round-up time on Arithmetic Ranch. Can you get all the tough ones into the big corral? This means can you find the answers to "tough" problems?

If you miss more than four examples in the First Round-Up (page 23), turn to page 24 and try "Catching Those That Got Away."

If you do not miss more than four examples in the First Round-Up, turn to page 25 and try "Roping the Tough Ones."

A cow hand moves fast and gets them all. Try hard to be a real cow hand.

Yippee! Here we go to the First Round-Up.



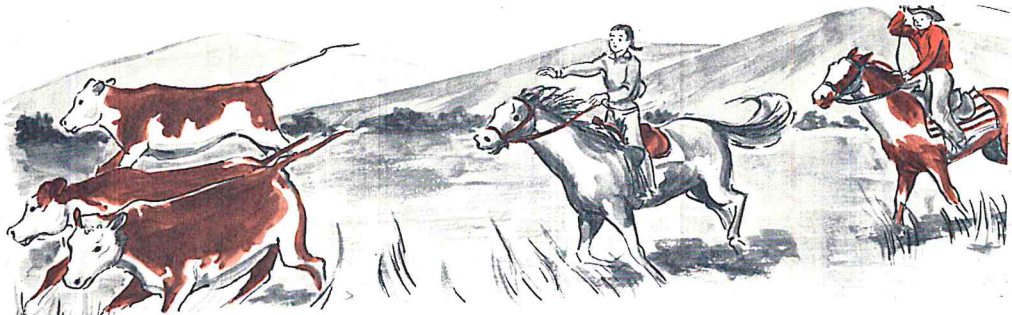
First Round-Up for Unit 1

Add. Write sums on folded paper.

1.	43	75	26	80	196	480	625
	24	13	60	15	302	310	142
	67	88	86	95	498	790	767
2.	47	55	38	68	526	335	448
	39	28	35	27	218	147	228
3.	73	47	92	81	793	545	670
	82	61	54	76	141	293	174
4.	79	33	45	86	394	549	763
	57	98	75	87	289	298	168
5.	34	91	15	7	386	416	56
	15	46	9	28	145	28	310
	73	23	84	17	116	132	8
	87	72	8	4	328	7	33

6. Copy neatly in straight columns and add:
6, 8, 7, 3 12, 76, 42 463, 675, 980

7. Write in figures: (a) twenty-three thousand one hundred thirty-six; (b) one thousand four.



Catching Those That Got Away

Move fast and get them all this time!

1. This one first! Turn to page 10. Write the sums on folded paper. You have five minutes for this.

2. Then catch these! Turn to page 12. Copy exercises 9 and 10 neatly in straight columns. Add.

3. Did these get away before? Get them this time! Turn to page 15. Write the sums in exercises 1 and 2 on folded paper.

4. These are tough. You are good if you can get them. Turn to page 18, exercises, 1, 2, and 3. Write the sums on folded paper.

Here are some new ones.

Copy these neatly in straight columns and add.

5.	2, 5, 6, 7	7, 9, 3, 6, 8
6.	25, 46, 78	27, 19, 43, 72
7.	256, 312, 742	65, 176, 9, 43
8.	$1.98, $3.12, $0.79	$8.75, $4.50, $5.69

Write these numbers in figures.

9. Three thousand eight hundred seventy-three

10. Thirty-two thousand five hundred

11. Fifty-four dollars and twenty-five cents

12. Twenty-eight thousand twenty-nine

Roping the Tough Ones

Jack and Ann went to town with Uncle Shorty. They kept their eyes and ears open.

1. They saw automobiles from many states. They noticed that the numbers on the plates had no comma to separate thousands from the rest of the number. Sometimes there was a space and sometimes there was a short dash instead of a comma.

Write the numbers on the plates below in words.

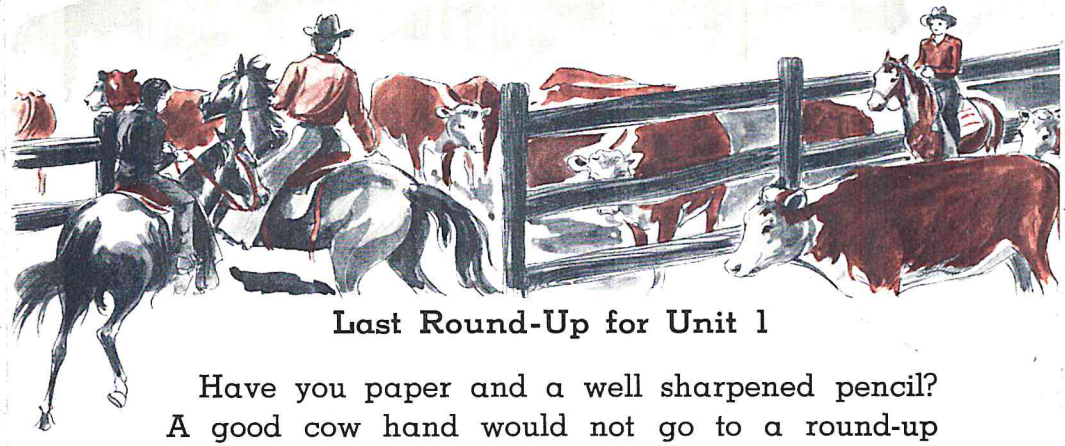
2. One of the neighbors had been on a six-day trip. In his notebook he had a record of how far he had driven each day.

Monday	327 miles	Thursday	416 miles
Tuesday	398 miles	Friday	435 miles
Wednesday	342 miles	Saturday	287 miles

How far did he drive the first three days of his trip?

How far did he drive Wednesday and Thursday together?

How many miles did he drive in all?



Last Round-Up for Unit 1

Have you paper and a well sharpened pencil? A good cow hand would not go to a round-up without his pony and lasso.

1. Add 7 to each of these numbers quickly. Write only the sums.

9 17 24 33 5 36 68 12

Write these numbers in words the way you say them.

2. Telephone number, Riverside 6043

3. Street address, 3867 Hartford Street

4. Date, Jack was born in 1932

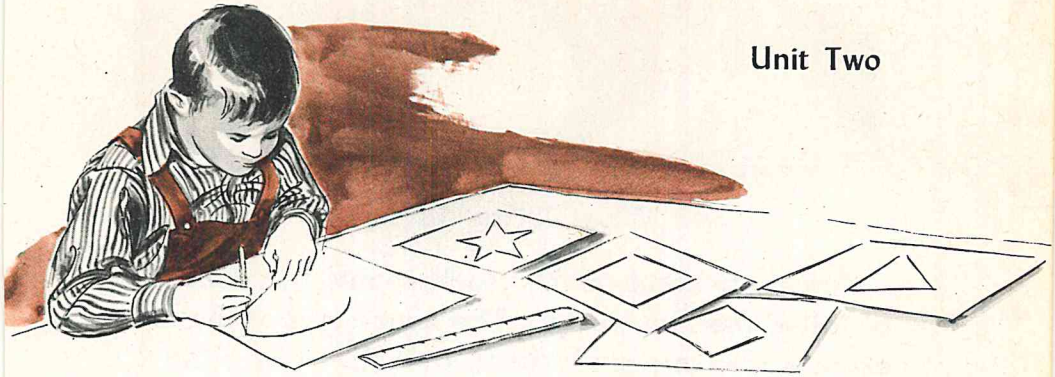
5. Write these sums on folded paper.

32	87	38	74	368	476	853
45	52	49	8	125	257	92

6. Copy neatly and add:

456, 37, 149, 8 $4.15, $1.38, $0.56

The teacher could mark all your arithmetic papers. This, though, would not help you to find and to correct your own mistakes. It is better that you mark your papers. Have all the problems on a page put on the blackboard and mark your papers from these.



Shapes of Things We See Every Day

A square has four equal sides and four square corners. These are square corners. ⌊ ⌋

The corners at the left are not square corners.

Has this page square corners?

Find as many square corners as you can in your schoolroom.

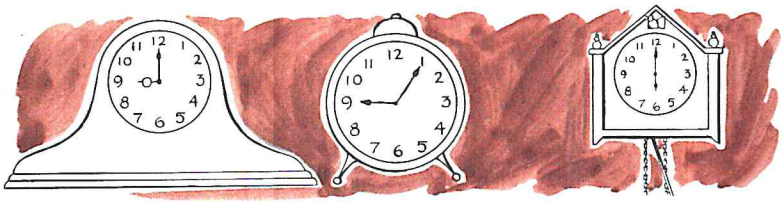
What shape is your handkerchief?

Draw a square with each side equal to 4 inches.

A half dollar is shaped like a circle. Name five other things that are shaped like circles.

Draw some circles using a pin, a string, and a pencil as John is doing in the picture. Color your circles and show them to the class.

Play that everything shaped like a square or circle has been taken out of the world. Name some things that would be left.



What Time Is It?

The short hand of the clock counts the hour. It is called the hour hand. The hour hand of the first clock above is exactly at 9, and the hour hand of the middle clock is near 9.

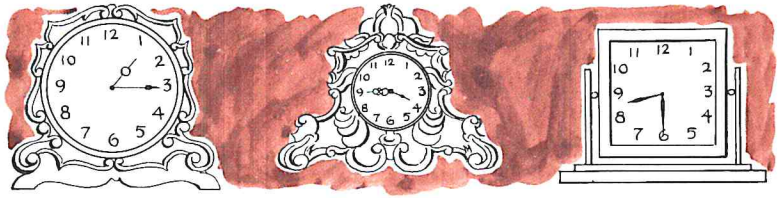
The long hand of a clock counts the minutes. It is called the minute hand. When the minute hand moves from one number to the next on the clock face, it has counted five minutes. At an exact hour, the minute hand is at 12.

The first clock above says it is exactly 9 o'clock. Where will the hands be when it is exactly 10 o'clock?

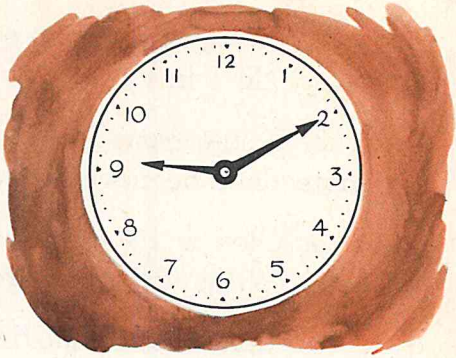
The middle clock says it is 5 minutes after 9 o'clock. Where will the minute hand be when it is 10 minutes after 9 o'clock?

What time is it by the third clock above?

What time is it by each of the clocks below?



Making a Clock



You can make a clock face from cardboard and a paper fastener. This is how it should look when it is finished.

The rim around the clock is divided into twelve equal parts by heavy lines. These lines are numbered from 1 to 12.

Each of the twelve equal parts around the clock face is divided into five smaller parts by shorter lighter lines. From one of these shorter lines to the next is one minute for the minute hand.

Below are drawings showing the parts of the clock before the hands are put in place.

What work has already been done on the partly finished clock face? What needs yet to be done?

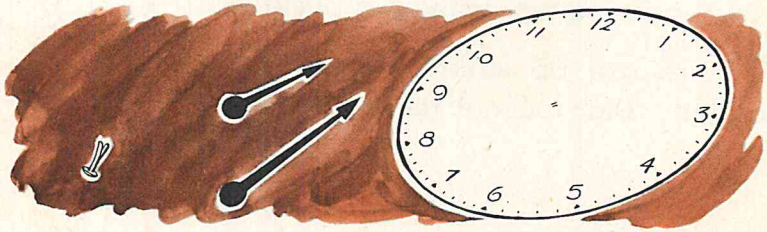
Make a clock face and put on the hands.

Turn the hands of the clock face you made to show:

1. 25 minutes after 9 — 10 minutes to 6

2. 20 minutes to 12 — 15 minutes after 8

3. Show different times on your clock. Ask the class to tell the time.



Subtraction Facts and Problems

1. I had 17 magazines and sold 8 of them. How many do I have left?

2. A kite costs 15¢. Jimmy has 9¢. How much more does he need to buy the kite?

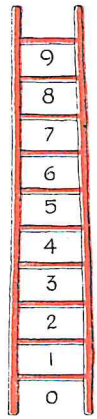
3. Glen is 13 years old, and his sister is 5 years old. What is the difference in their ages?

4. Tom has 16 marbles, and Bob has 9. How many more does Tom have?

You need to subtract in order to do problems like these. Before you can subtract well, you must know the 100 subtraction facts. Knowing the 100 addition facts will help you learn the subtraction facts, for each subtraction fact is just the opposite of an addition fact. 9 and 2 are **11**, while 11 minus 2 is **9**.

$$\begin{array}{r} 9 \\ +2 \\ \hline 11 \end{array} \qquad \begin{array}{r} 11 \\ -2 \\ \hline 9 \end{array}$$

If you can climb this ladder, you will know more than half the subtraction facts. On the first rung, you say **0 minus 0 is 0.** On the second rung, you say **1 minus 1 is 0,** and **1 minus 0 is 1.** On the third rung, you say **2 minus 2 is 0, 2 minus 1 is 1, 2 minus 0 is 2.** Do you get the idea? Continue till you reach the top, without a mistake.



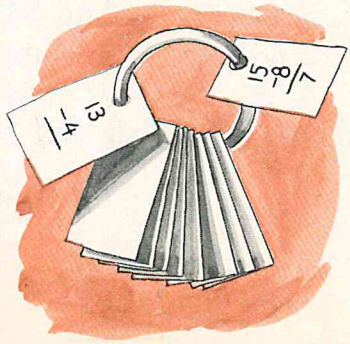
There are 55 subtraction facts on the ladder. Did you get them all?

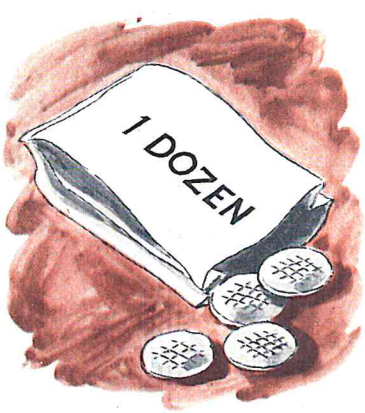
The 45 Harder Subtraction Facts

Study these harder facts. Then hold a card over a row of answers and say them quickly, or write the answers on folded paper.

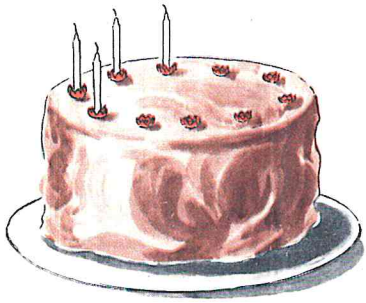
1.	10	11	12	13	11	11	10	11	16
	1	8	3	7	3	5	5	7	8
	9	3	9	6	8	6	5	4	8
2.	14	10	11	13	13	15	10	15	11
	7	4	2	4	8	7	9	9	6
	7	6	9	9	5	8	1	6	5
3.	10	14	12	12	11	12	15	12	14
	2	9	8	4	4	9	6	6	8
	8	5	4	8	7	3	9	6	6
4.	13	16	14	12	10	10	14	15	13
	5	7	5	7	7	3	6	8	6
	8	9	9	5	3	7	8	7	7
5.	10	17	11	17	16	10	12	13	18
	6	9	9	8	9	8	5	9	9
	4	8	2	9	7	2	7	4	9

Make a subtraction helper card for each subtraction fact that is hard for you. Place the helper cards on a notebook ring to make a merry-go-round.

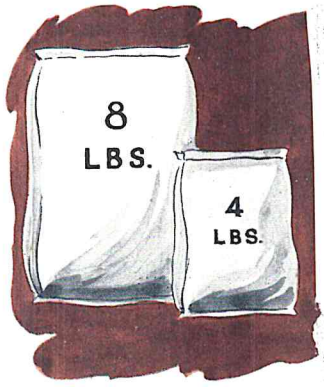




How many are left?



How many more are needed?



What is the differen

Three Kinds of Subtraction Problems

One kind of subtraction problem asks **how many are left,** or **how much is left.**

Another kind of subtraction problem asks **how many more are needed** or **how much more is needed.**

A third kind of subtraction problem asks you to **find the difference** between two numbers.

Tell which kind each of the following problems is, and then find the answer.

1. Mr. Walker is 47 years old, and Mrs. Walker is 43 years old. What is the difference between their ages?

2. Eighteen boys are needed to play baseball. There are 12 on the field. How many more are needed?

3. Mr. Sweet had 547 pounds of honey and sold 215 pounds. How many pounds are left?

4. A story book costs 89¢. Mary has 64¢. How much more does she need?

More Subtraction Problems

How quickly can you find the answers to all these problems?

1. Mother must have 28 small cakes for a party. She has baked 12 of them. How many more does she need to bake?

2. There were 12 cookies on a baking sheet. Mary put 4 of them on a plate. How many were left on the baking sheet?

3. Jane weighs 78 pounds, and Nancy weighs 63 pounds. What is the difference in their weights?

4. Edward is picking berries. He wants to fill 24 boxes. He has picked enough to fill 11 boxes. How many more boxes will he need to fill?

5. The fat man in the circus weighs 647 pounds and the fat lady weighs 432 pounds. What is the difference in their weights?

6. A ladder reaches 36 feet above the ground. Albert has climbed up 25 feet. How many more feet does he need to climb to reach the top?

7. It is 54 miles from Baltimore to Gettysburg. Mr. Chase has gone 32 miles. How many more miles are there to go?

8. It is 698 miles from Chicago to Washington and 354 miles from Chicago to Cleveland. How much farther from Chicago is Washington?

54	67	83	59	479	659	758
31	13	52	23	218	429	555

The 100 Subtraction Facts

Say the remainders below or write them on folded paper. Try this lesson often. Work with a partner on the hard ones.

1.	4 3	6 3	7 6	7 0	3 2	2 1	2 2	0 0	9 8	4 2
2.	3 0	1 1	9 0	9 1	6 6	7 1	4 0	6 1	2 0	10 1
3.	7 4	9 3	8 7	10 5	9 5	1 0	8 1	10 9	3 3	7 7
4.	8 0	5 1	8 4	9 9	11 2	6 5	7 2	5 3	8 6	4 1
5.	6 2	9 4	8 8	6 4	5 5	4 4	5 0	14 7	5 4	16 8
6.	8 2	11 8	5 2	3 1	6 0	10 3	9 7	7 5	11 9	10 8
7.	10 7	7 3	12 4	11 6	13 9	12 6	12 3	10 6	18 9	11 5
8.	8 3	10 2	13 6	12 9	9 6	17 8	13 7	8 5	11 7	13 4
9.	11 3	9 2	16 9	12 7	12 8	15 6	15 7	14 6	12 5	15 9
10.	10 4	15 8	16 7	14 8	11 4	17 9	13 5	14 9	14 5	13 8

Problems

In some of the problems below you will add to find the answer, and in some you will subtract. Try to pick out the words in each problem that tell you what to do. Then find the answer.

1. Joan read 38 story books and 24 other books during the summer. How many books did she read?

2. The lady at the desk said that in one day 369 books were borrowed and 253 were returned. How many more were borrowed than were returned?

3. On one shelf there were 29 red books and 33 green books. How many red and green books were there on the shelf?

4. Virginia has 78 books in a set. She has read 45 of them. How many does she have left to read?

5. There were 68 books on a shelf. If 31 of them were taken out, how many were left on the shelf?

6. Earl read 144 pages in one book and 112 pages in another. How many pages did he read?

7. There are 336 pages in a big book of stories. Inez has read 215 pages. How many more pages does she have to read?

8. Tom read 284 pages in a book, and Harry read 253 pages. Find the difference in the number of pages they read.

Watching Endings

When you subtract 3 from a number ending in 5, the remainder ends in 2. The tens figure of the remainder is the same as the tens figure of the number.

The 3 is less than the 5. The figure in tens place does not change.

15	25	45	95
3	3	3	3
12	22	42	92

Write these remainders on folded paper. Tell for each why the tens figure does not change.

1.	26	46	66	86	13	33	53	73
	5	5	5	5	3	3	3	3
2.	35	47	27	59	83	28	36	43
	3	5	7	3	2	4	4	1
3.	24	56	29	69	28	38	87	46
	3	2	5	6	7	6	6	6

When you subtract 8 from a number ending in 5, the remainder ends in 7. The tens figure in the remainder is one less than the tens figure of the number.

The 8 is more than the 5. The figure in tens place changes.

25	35	55	85
8	8	8	8
17	27	47	77

Write these remainders on folded paper. Tell for each why the tens figure changes.

4.	14	24	54	74	27	47	67	97
	7	7	7	7	9	9	9	9

Watching the Tens Figure

The tens figures of some of these remainders do change and some do not change. Watch carefully that you do not make a mistake.

1.	55	71	40	53	36	80	44	51
	6	7	5	8	8	8	7	3
2.	35	50	31	43	33	41	54	35
	8	1	6	7	5	5	6	7
3.	59	46	39	47	91	42	73	54
	9	7	7	6	3	9	7	6
4.	80	76	67	58	34	56	91	45
	9	6	5	1	7	4	3	9
5.	65	56	81	27	63	49	77	84
	8	9	4	3	6	7	2	8

6. Mrs. White bought bread for 9 cents and gave the store man 25 cents. How much change should he give her?

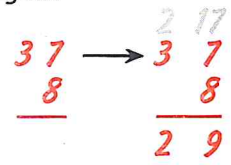
7. Mr. White is 39 years old, and Virginia is 7 years old. How much older is Mr. White than Virginia?

8. Virginia's birthday is on October 23. It is now October 7. How many days until her birthday?

9. Mrs. White will need 43 buttons for a dress for Virginia. There are 7 buttons on an old dress that will do. How many more buttons will she need?

How You Think When You Subtract

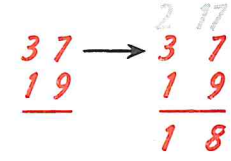
Father is 37 years old, and Mary is 8 years old. What is the difference in their ages?



There are 3 tens and 7 ones in 37. But you cannot subtract 8 ones from 7 ones. You must take 1 of the tens of 37 and break it into ones. There are then 2 tens and 17 ones in 37. You can subtract 8 ones from 17 ones.

The difference in their ages is 29 years.

Father is 37 years old, and Uncle Robert is 19 years old. What is the difference in their ages?



As in the example above, you cannot subtract 9 ones from 7 ones. You think of 37 as made up of 2 tens and 17 ones. Subtract 9 ones from 17 ones and you get 8 ones. Then subtract 1 ten from 2 tens and you get 1 ten.

The difference in their ages is 18 years.

In each of the examples above, we had to take 1 from the figure in tens place. We call this borrowing.

Show how you think in each of these subtractions.

1.	47	94	60	63	82	75	97	26
	28	37	48	44	66	17	29	19
2.	81	74	93	64	58	35	49	62
	27	38	84	26	29	16	19	35

Our Very Own Arithmetic

Everyone uses addition and subtraction in his daily work. Here are some problems children made up about their school work. Can you make up some problems about things you are doing?

1. Irene had 81 subtraction facts to learn. After learning 56 of them so she can say them quickly, how many does she have left to learn?

2. The next day Irene could say all except 13 of the 81 facts quickly. How many can she say?

3. Irene knows 63 spelling words and Mary Lou knows 72. How many more does Mary Lou know?

4. The class had a subtraction test. The grades on some of the papers were: Irene 75, Mary Lou 92, George 84. How much higher was Mary Lou's grade than Irene's? How much higher was George's grade than Irene's?

5. Mary learned 15 lines of a poem. Tommy learned 7 lines more than Mary. How many lines did he learn?

6. The children were reading a story 35 pages long. If they read 19 pages Monday, 6 pages Tuesday, and 10 pages Wednesday, did they finish the story?

7. Bobby read three books. One had 275 pages, another had 298 pages, and the last was 301 pages long. How many pages did he read?

8. Billy brought two books from the library. One was 225 pages long. The other was 300 pages long. How many more pages did the longer book have?

Ghost Figures in Subtraction

You have to see ghost figures when you borrow in subtraction. A ghost figure is one which you think but which is not really there.

Subtract 217 from 546

In ones place you cannot take 7 from 6. You borrow 1 ten from tens place and use it to make 10 ones. You now have 16 ones.

Real Example	Ghost Figures
546	3 16 54 6
217	21 7
329	32 9

It is easy now to take 7 ones from 16 ones, 1 ten from 3 tens, and 2 hundreds from 5 hundreds.

Subtract 352 from 738

You cannot take 5 tens from 3 tens. You have to borrow 1 hundred from hundreds place and use it to make 10 tens. You now have 13 tens.

Real Example	Ghost Figures
738	6 13 7 3 8
352	3 5 2
386	3 8 6

You take 2 ones from 8 ones, 5 tens from 13 tens, and 3 hundreds from 6 hundreds.

Subtract. Think or write the ghost figures.

1.	783	965	843	379	576
	547	684	391	187	238
2.	853	450	691	793	957
	627	124	429	256	329

One Ghost Follows Another

On the last page, you learned to borrow from tens place or to borrow from hundreds place. You will learn now how to borrow from tens place and from hundreds place in the same example.

Subtract 269 from 725.

Real Example	Ghost Figures	More Ghost Figures
725 269 456	1 15 7 2 5 2 6 9	6 11 15 7 2 5 2 6 9 4 5 6

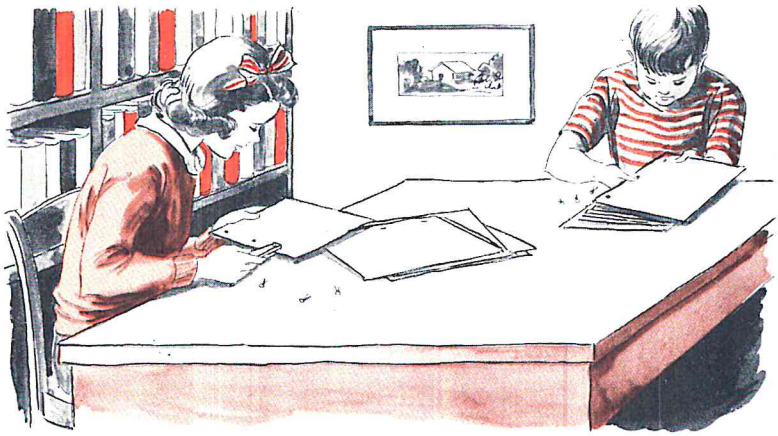
You cannot take 9 ones from 5 ones, so you borrow 1 ten to put with the 5 ones to make 15 ones. You can take 9 ones from 15 ones.

After borrowing from tens place, you have only 1 ten left. You cannot take 6 tens from 1 ten, so you borrow 1 hundred to put with the 1 ten to make 11 tens. You can take 6 tens from 11 tens.

After borrowing from hundreds place, you have only 6 hundreds left. Take 2 hundreds from 6 hundreds.

Subtract. Think or write the ghost figures when you borrow. Remember one ghost may follow another!

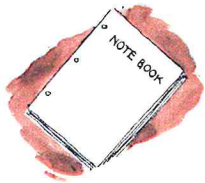
1.	673	451	765	842	733	525	964
	196	283	398	555	367	278	677
2.	737	492	528	629	473	666	253
	395	157	288	435	257	189	138



Making an Arithmetic Notebook

You will need an arithmetic notebook. You can write or draw or paste important things in it. If you do not have such a notebook already, here is an easy way to make one.

You will need two sheets of heavy paper for covers, about ten sheets of large paper for the pages, and three paper fasteners. You can add more pages as you need them.



Take good care of your notebook. Keep your eyes wide open for good things to put in it.

On page 1 of your notebook you can write the addresses of ten of your school friends. It would be well to write their telephone numbers, too. Choose a partner and read what you have written aloud to him. Did you make each figure carefully?

Do Not Let a Zero Fool You

Zeros in subtraction may cause a pupil to get the wrong answer. Will you let a 0 fool you? We will find out.

Cover the answers for each row and write your answers on folded paper.

1. Subtracting zeros

365	473	964	486	428	396	753
110	102	200	140	305	100	170
255	371	764	346	123	296	583

2. Subtracting from zeros

280	407	700	603	750	800	908
134	252	346	228	483	514	427
146	155	354	375	267	286	481

3. Zeros in the remainder

379	375	569	973	842	922	451
169	215	365	571	339	317	381
210	160	204	402	503	605	70

4. Zeros everywhere

605	730	500	613	701	547	901
105	103	306	290	329	487	361
500	627	194	323	372	60	540

5. Copy the 100 addition facts from page 10 into your arithmetic notebook. See how fast you can give the right answers to Mother this evening.

Subtraction Races

Choose a racing partner. Both will start at exactly the same time. You will subtract as fast as you can. When one of you has finished the first race, stop and grade each other's papers. The one with more correct answers wins. Do the rest of the races the same way.

Race I. Copy and subtract.

1.	130 − 86	609 − 465	463 − 236
2.	340 − 109	267 − 189	763 − 246
3.	900 − 658	650 − 298	830 − 430

Race II. Write remainders on folded paper.

4.	4	14	16	9	3	11	14	17	8	15
	3	5	9	0	0	2	9	8	8	7
5.	12	13	10	7	16	17	14	12	11	16
	7	6	7	0	7	9	7	5	9	8

Race III. Copy and subtract.

6.	\$14.02 − \$11.23	\$8.94 − \$.98
7.	\$45.73 − \$23.54	\$.23 − \$.15
8.	\$2.34 − \$2.00	\$9.89 − \$1.95

No Pencils, Please!

Jack and Mary are trying to find the answers to some arithmetic problems as they are walking along. Wouldn't they look funny if they had to use a pencil now? Can you find the answers without using your pencil?

1. Jack had 25¢. He spent 5¢ for his kite. How much did he have left?

2. The kite cost 5¢. He then bought a ball of string for 10¢. How much did both together cost?

3. Mary bought a pail for 15¢ and a shovel for 9¢. How much did she pay for both?

4. Oranges cost 5¢ each. How much did Mary pay for 4 oranges?

5. Mary paid 5¢ for a sandwich, 3¢ for a candy bar, and 5¢ for peanuts. How much did they cost?

6. John bought a popcorn ball for 2¢, a sandwich for 5¢, and an apple for 3¢. How much did he pay for these?

7. Mary saw some cookies. They cost 2¢ each. How much must she pay for 5 of them?

8. The tail on John's kite is 15 inches long. He is going to tie 9 more inches on it. How long will the tail be then?

9. The children left home at 9 o'clock. That was half an hour ago. What time is it now?

10. Mother said to be home at 3 o'clock. If it takes half an hour to get home, at what time should the children start home?

Wake Up, Billy!

Well, well! What is happening here? Billy had a bad dream. He dreamed that all his subtraction examples were marked wrong. Billy always gets most of his answers right. Copy all the examples. Correct those that are wrong.

Billy Brown
Grade 4

Dreamland School
April 1st, 1947

Subtraction

1. $1.63 × .95 = $0.68

2. $14.50 × 4.71 = $9.79

3. $80.20 × 14.15 = $66.05

4. $15.77 × 8.85 = $6.92

6. $75.00 × 2.94 = $72.06

7. $11.94 × 1.56 = $9.38

8. $5.05 × 1.96 = $3.09

9. $13.59 × 1.74 = $5.85

10. $8.04 × .69 = $7.35

11. $7.35 × 1.34 = $5.01

12. $17.86 × 13.50 = $4.26

13. $1.43 × .97 = $0.66

Subtracting Dollars and Cents

Here are four things that you must think of when you are subtracting dollars and cents.

a. Write the larger number with the dollar sign before the number of dollars and the cents point before the number of cents.

b. Write the smaller number with its cents point under the cents point of the other number. Do not write the dollar sign with the smaller number.

c. Subtract as you subtract any other numbers.

d. The cents point of the remainder is under the cents point of the other numbers. Write a dollar sign before the number of dollars in the remainder.

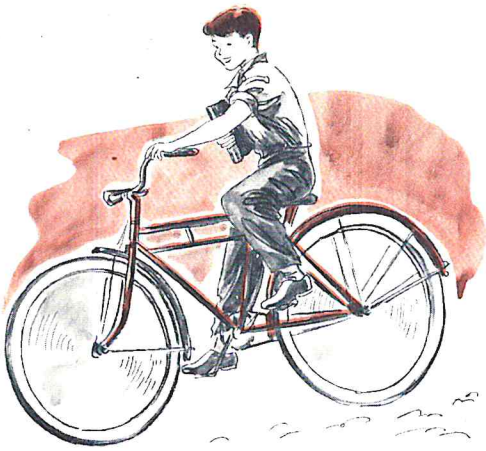
Make up subtraction problems using the amounts below. Give them to the class to work.

1. \$9.69 from \$12.16
2. \$7.41 from \$9.85
3. \$0.89 from \$2.10
4. \$24.98 from \$30.00
5. \$3.15 from \$5.50
6. \$17.10 from \$25.00

Big numbers are subtracted just as you subtract smaller numbers. Write the remainders on folded paper.

7.	7,863	5,349	9,143	2,116	8,352
	3,213	1,327	5,125	1,109	4,182
8.	5,731	7,540	6,072	9,500	3,005
	2,811	4,250	1,434	6,607	1,216

Check your work at the blackboard.



A Young Business Man

1. Gary works in a drugstore three afternoons a week. He earns 35 cents each afternoon that he works. How much can he earn in one week?

2. On three other afternoons he sells newspapers. Last week he earned 27 cents on Tuesday, 30 cents on Thursday, and 45 cents on Saturday selling papers. How much did he earn in all?

3. Last week 96 papers were given to him to sell. He had to return 16 of them. How many did he sell?

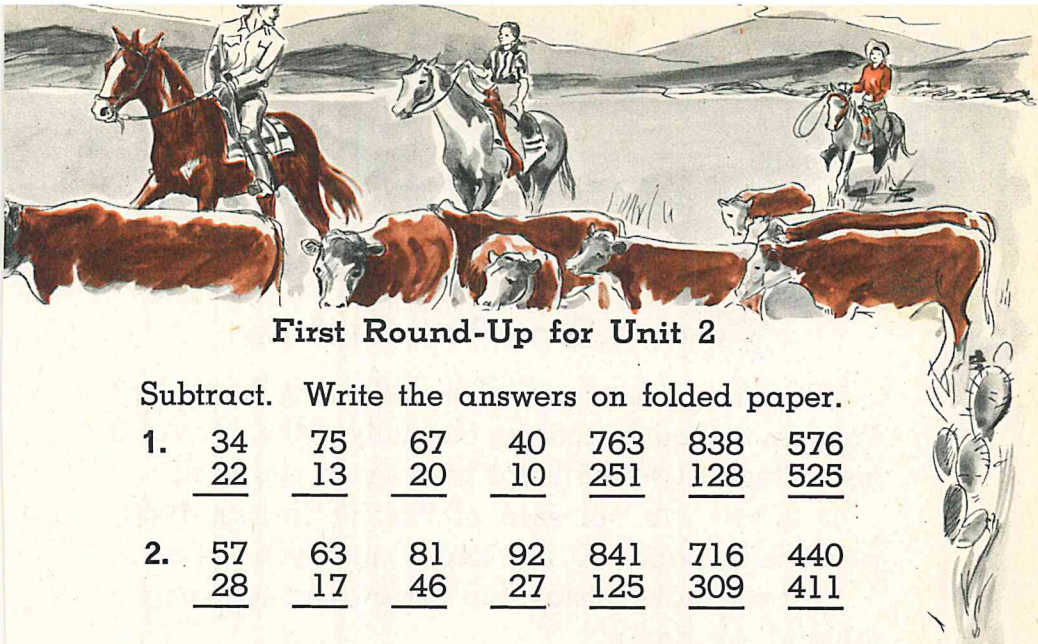
4. Gary earned $4.92 in August and $5.14 in September. How much more did he earn in September?

5. How much did Gary earn in August and September together?

6. Gary bought a suit that cost $8.79. He gave the salesman $10. How much change should he get?

7. His shoes cost $2.65, his shirt cost $0.89, and his underwear cost $1.15. How much did they all cost?

8. A customer called the drugstore for a bottle of medicine that cost $1.69, and asked that the delivery boy have change for $5. How much change should Gary take with him when he delivers the medicine?



First Round-Up for Unit 2

Subtract. Write the answers on folded paper.

1.	34	75	67	40	763	838	576
	22	13	20	10	251	128	525
2.	57	63	81	92	841	716	440
	28	17	46	27	125	309	411
3.	128	153	134	117	573	829	916
	52	81	63	45	182	237	345
4.	143	105	165	177	645	736	810
	75	68	97	89	259	47	213

Copy and subtract.

5. 756 from 918

6. 335 from 602

7. 1,245 from 6000

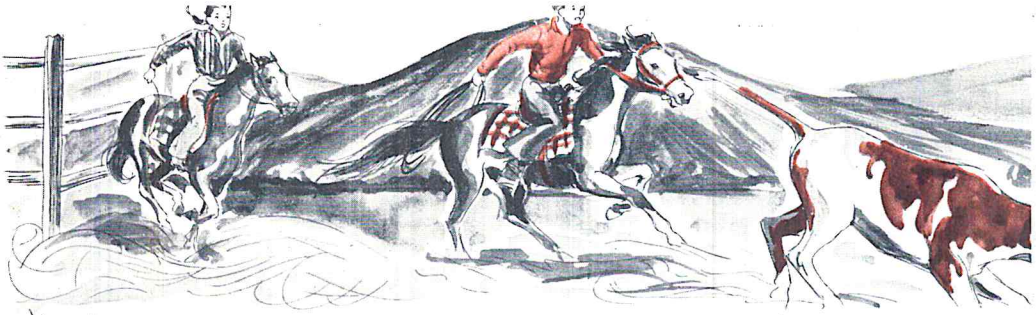
8. 1,254 from 3,161

9. 3,706 from 8,069

10. $1.10 from $3.05

If you did not miss more than four examples in the First Round-Up, turn to page 51 and try "Roping the Tough Ones."

If you missed more than four, turn to page 50 and try "Catching Those That Got Away."



Catching Those That Got Away

Why did you miss examples on the First Round-Up? You can find out by looking carefully at the examples you missed. Use the helps below that you need.

1. If you are not sure of the subtraction facts, practice on pages 30, 31, and 32 until you are sure.

2. If you make mistakes in borrowing, study pages 40 and 41 again.

3. If exercises 1 to 4 on page 49 are the ones that got away, practice pages 38, 40, 41, and 43.

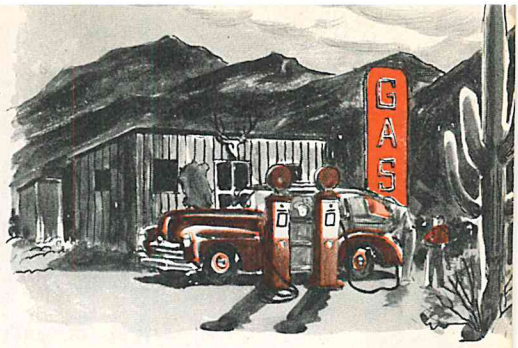
4. If exercises 5 to 8 on page 49 are the ones that got away, practice the first and third races on page 44, and practice page 47.

5. If you missed exercises 9 and 10 on page 49, practice exercise 2, page 5, and page 47.

A good way to check subtraction is to add the difference to the number you took away. The sum will be the same as the larger number in your subtraction. Explain this way of checking to a pupil now Roping the Tough Ones.

Subtract		*Check*	
753 larger			*larger*
291 smaller	→	*291*	*Add*
462 difference	→	*462*	
			larger

Roping the Tough Ones



1. Uncle Shorty paid 45 ¢ for oil, $2.18 for gasoline, and $1.25 to have the car washed. How much was his bill?

2. The filling station man said, "I sold 328 gallons of gasoline on Tuesday, 314 gallons Wednesday, 208 gallons Thursday, and 254 gallons Friday." Find how many gallons he sold in the four days.

3. The filling station man also said that he sold 7,906 gallons of gasoline last month and has sold 5,048 gallons this month. How many more gallons did he sell last month than he has sold this month?

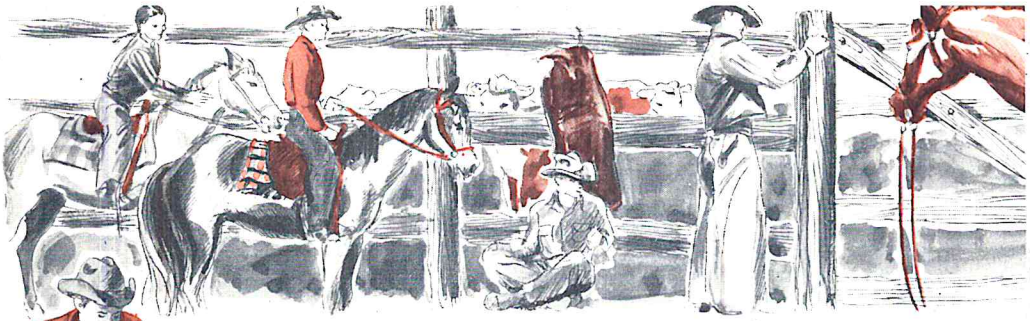
4. How many gallons of gasoline has the filling station man sold last month and this month together?

5. Mr. Hart's truck will haul 2,500 pounds, and there are 1,584 pounds in it now. How many more pounds could he put in the truck?

6. Before he left home this morning, Uncle Shorty said his car had been driven 6,731 miles. He now says it has been driven 6,804 miles. How many miles has he driven today?

7. Saturday morning there were 1,650 gallons of gasoline in the filling station tank. If 792 gallons have been sold, how many gallons are left?

8. Uncle Shorty owed the filling station man $3.88 and gave him $5.00. How much change should he get?

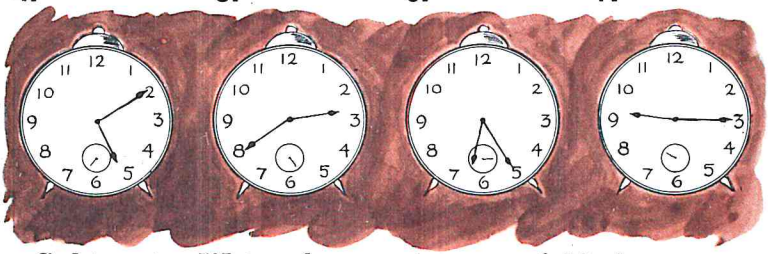


Last Round-Up for Unit 2

1. Draw a square that is 2 inches on each side.
2. Name something that is shaped like a square.
3. Name three things that are shaped like a circle.

Tell what time it is by each of these clocks:

4. 5. 6. 7.



Subtract. Write the answers on folded paper.

8.	45	75	87	23	882	617	814
	12	28	9	18	144	225	326
9.	50	60	30	70	506	403	700
	20	39	2	62	215	116	342

Copy and subtract. Check.

10. 903 from 1,234

11. 784 from 976

12. 154 from 631

13. 65 from 913

14. It takes 1000 stamps to fill a stamp book. Joe has saved 746. How many more does he need?

Figuring Laundry Costs

1. Lee's father sends his collars and shirts to the Snow White Laundry. How much does it cost to have 4 shirts washed? To have 9 collars washed?

2. Lee's mother sends her washing to the Snow White Laundry. How much does it cost to have 6 lunch cloths washed? To have 5 aprons washed?

3. Lee had 2 shirts and 3 collars washed. What was the cost?

4. How much more does it cost to have an apron washed than to have a towel washed?

Find what it will cost to wash:

5. 3 sheets
6. 7 towels
7. 6 collars
8. 5 shirts
9. 8 sheets
10. 7 sheets
11. 3 aprons
12. 4 curtains
13. 9 towels

Meeting Some Old Friends

Do you remember learning these in the third grade?

a. When you multiply any number by 0 or multiply 0 by any number, the answer is 0.

b. When you multiply any number by 1 or multiply 1 by any number, the answer is the number itself.

Say these answers quickly:

1.	4×0	0×5	6×0	0×7	1×0
2.	0×1	2×0	0×3	9×0	0×4
3.	5×0	0×6	7×0	0×8	8×0
4.	0×9	3×0	0×2	0×0	1×1
5.	2×1	1×3	5×1	1×6	7×1
6.	1×8	9×1	1×2	3×1	1×4
7.	6×1	1×7	8×1	1×9	1×5

When you multiply two numbers together, the answer is called the **product.**

12
×4
48 product

The sign of multiplication is $\times$. You read it as **times** or **multiplied by.** Read 4×12 as four times twelve or as twelve multiplied by four.

8. Find the cost of 3 kites at 10¢ each.

9. Nell had 9 ribbons each 11 inches long. What was the length of all of them together?

10. Find the total weight of 6 boxes each weighing 10 pounds.

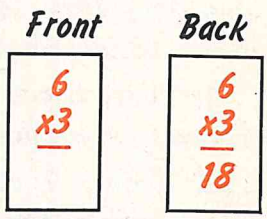
11. Find the number of children at a play if there are 5 rows with 12 in each row.

More Friends from the Third Grade

Study these multiplication facts again. Learn to say them quickly when the products are covered. Make helper cards for any that are hard for you.

$2 \times 2 = 4$	$3 \times 2 = 6$	$2 \times 3 = 6$
$4 \times 2 = 8$	$3 \times 3 = 9$	$2 \times 4 = 8$
$2 \times 5 = 10$	$2 \times 6 = 12$	$5 \times 2 = 10$
$6 \times 2 = 12$	$4 \times 3 = 12$	$3 \times 4 = 12$
$2 \times 7 = 14$	$5 \times 4 = 20$	$7 \times 2 = 14$
$3 \times 5 = 15$	$4 \times 4 = 16$	$5 \times 3 = 15$
$8 \times 2 = 16$	$3 \times 6 = 18$	$2 \times 8 = 16$
$6 \times 3 = 18$	$9 \times 2 = 18$	$2 \times 9 = 18$

The same plan is used for making multiplication helper cards as was used in making addition helper cards and subtraction helper cards. On the front write only the numbers to be multiplied. On the back write the numbers to be multiplied and their product. These, too, may be put on a notebook ring to make a merry-go-round.



1. If you know the cost of 1 pencil, how can you find the cost of 2 pencils? Of 5 pencils?

2. A pencil costs 3¢. What is the cost of 4 pencils?

3. If you know the weight of 1 box of candy, how can you find the weight of 4 boxes of candy?

Old Friends Keep Coming

Learn to say these multiplication facts quickly when the products are covered. Make helper cards for any that are hard for you.

$7 \times 3 = 21$	$4 \times 5 = 20$	$3 \times 7 = 21$
$6 \times 4 = 24$	$5 \times 5 = 25$	$4 \times 6 = 24$
$3 \times 8 = 24$	$9 \times 3 = 27$	$8 \times 3 = 24$
$6 \times 5 = 30$	$3 \times 9 = 27$	$5 \times 6 = 30$
$5 \times 7 = 35$	$7 \times 4 = 28$	$7 \times 5 = 35$
$9 \times 4 = 36$	$4 \times 7 = 28$	$4 \times 9 = 36$
$5 \times 8 = 40$	$8 \times 4 = 32$	$8 \times 5 = 40$
$9 \times 5 = 45$	$4 \times 8 = 32$	$5 \times 9 = 45$

1. Mrs. Murphy is making sandwiches for a picnic. Each child will have 4 sandwiches. What else does Mrs. Murphy need to know to find how many sandwiches she needs to make?

2. There are 9 children ready for the picnic. How many sandwiches should Mrs. Murphy make?

3. If only 7 children were going to the picnic, how many sandwiches should Mrs. Murphy make?

4. If each child is to have 3 cookies, how many cookies will she pack for 5 children? 7? 9?

5. If each child eats 2 stuffed eggs, how many will 4 children eat? 8? 3? 6? 2?

Carrying in Multiplication

1. Multiply 26 by 4.

Think 4×6 is 24. Write the **4** under the 6 of 26, and carry the 2 in your mind.

Think 4×2 is 8 and the 2 carried in mind makes 10. Write the **10** as shown. The product is **104.**

To check multiplication, cover the product and go over your work a second time.

$$\begin{array}{r} 26 \\ \times\ 4 \\ \hline 104 \end{array}$$

2. Multiply 324 by 7.

Think 7×4 is 28. Write the **8** under the 4, and carry the 2 in mind.

Think 7×2 is 14 and the 2 carried in mind makes 16. Write the **6** under 2 of 324, and carry the 1 in mind.

Think 7×3 is 21 and the 1 carried in mind makes 22. Write the **22** as shown. The product is **2,268.**

$$\begin{array}{r} 324 \\ \times\ 7 \\ \hline 2268 \end{array}$$

Multiply and check. Use folded paper.

3.	47	42	76	23	786	594	473
	× 3	× 5	× 5	× 3	× 2	× 3	× 3
	141	210	400	69	1572		
4.	32	20	36	41	980	485	859
	× 8	× 9	× 4	× 6	× 2	× 3	× 2
5.	12	32	25	28	604	430	562
	× 9	× 6	× 4	× 3	× 4	× 5	× 4
6.	13	31	29	10	240	630	304
	× 5	× 7	× 2	× 8	× 5	× 4	× 5

Thinking About Multiplication

Multiply 586 by 4.

What do you really do and think when you multiply?

586
4
2344

To find the first product figure at the right, multiply 6 by 4. 4 times 6 is 24. What do you do with the 4 of 24? With the 2?

To find the second product figure, multiply 8 by 4 and add 2. 4 times 8 and 2 are 34. Why did you add the 2? What do you do with the 4 of 34? With the 3?

To find the third product figure, multiply 5 by 4 and add 3. 4 times 5 and 3 are 23. Why did you add the 3? What do you do with the 23?

Someone should work this example on the blackboard and explain each step as he goes along.

When you multiply and carry, you must hold a number in your mind. When you multiply the next figure, you add the number you are holding in your mind to the new product. We call "4 times 8 and 2 are 34" a **times-and fact.**

Say the times-and facts below as quickly as you can.

1.	$2\times3+1$	$3\times1+1$	$4\times9+2$	$3\times9+2$
2.	$4\times1+1$	$4\times8+2$	$4\times1+3$	$3\times2+1$
3.	$3\times8+2$	$4\times2+1$	$3\times7+1$	$4\times2+3$
4.	$3\times9+1$	$2\times4+1$	$4\times3+1$	$3\times6+2$
5.	$4\times4+1$	$3\times7+2$	$3\times0+1$	$2\times9+1$
6.	$4\times7+2$	$2\times8+1$	$3\times5+2$	$4\times5+1$

A Times-And Game

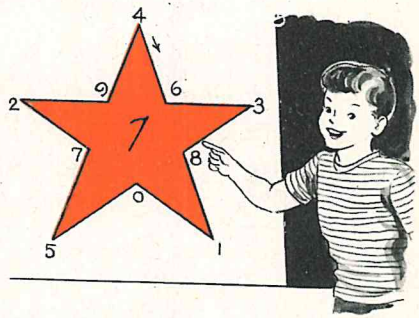
Choose someone to draw a big star on the blackboard and to number it exactly as in the book.

Choose a captain to call the numbers of exercises to be done and to point to the persons who will do them.

A $*$ stands for all the numbers around the big star. If the captain should call "Number 1" and point to you, you would say 3 times 4 and 1 are 13, 3 times 6 and 1 are 19, and so on all the way around.

Be ready when the captain calls.

1. 3 times $*$ and 1
2. 5 times $*$ and 1
3. 4 times $*$ and 2
4. 2 times $*$ and 1
5. 4 times $*$ and 1
6. 3 times $*$ and 2
7. 5 times $*$ and 2
8. 5 times $*$ and 3



Write these products on folded paper. Keep a record of the times-and facts you use in multiplying.

9.	98	67	74	93	356	791	613
	$\times$ 2	$\times$ 3	$\times$ 3	$\times$ 4	$\times$ 4	$\times$ 4	$\times$ 5
10.	74	57	39	53	176	782	319
	$\times$ 5	$\times$ 5	$\times$ 5	$\times$ 4	$\times$ 3	$\times$ 5	$\times$ 2

11. If there are 38 books on a shelf, how many books are there on 4 shelves?

Practice and Problems

Multiply and check. Then put the exercises on the blackboard and check again.

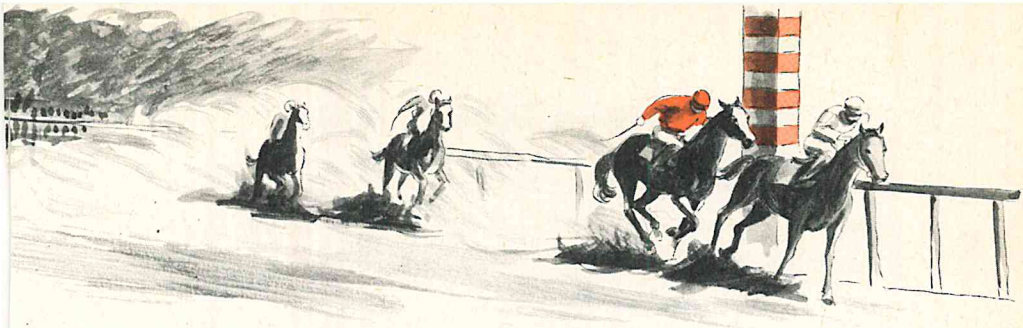
1.	22 × 7	34 × 8	26 × 5	52 × 9	246 × 4	629 × 5	947 × 3
2.	59 × 3	44 × 6	57 × 4	48 × 2	786 × 2	868 × 4	614 × 5
3.	32 × 9	24 × 8	42 × 7	28 × 5	325 × 6	541 × 7	430 × 8
4.	37 × 4	38 × 3	46 × 2	54 × 6	301 × 9	431 × 6	525 × 7
5.	23 × 7	35 × 9	27 × 4	53 × 6	567 × 3	857 × 4	758 × 5
6.	58 × 3	45 × 8	56 × 3	59 × 2	453 × 6	504 × 7	218 × 5

7. A barrel of salt weighs 280 pounds. Find the weight of 4 barrels of salt.

8. A barrel of flour weighs 196 pounds. Find the weight of 5 barrels of flour.

9. It is 241 miles from Philadelphia to Albany. A truck has made the trip 8 times. How many miles is that?

10. It is 708 miles from Portland, Maine, to Cleveland, Ohio. A truck made the trip 4 times. How many miles was that?



Multiplication Races

Choose a racing partner. Both will start at exactly the same time. You will write the products on folded paper as fast as you can. When one of you has finished Race 1, you will both stop and grade each other's papers. The one with more answers correct wins. Do the rest of the races the same way. Ready! Go!

RACE I

0	2	0	1	1	1	5	0	7
0	0	6	5	3	1	0	3	1
0	3	0	4	1	0	8	3	1
9	0	1	1	2	4	0	1	4

RACE II

4	5	1	5	6	1	3	3	2
0	5	7	1	2	8	4	3	2
2	3	2	5	2	5	4	4	5
4	2	5	4	3	2	2	5	3

RACE III

8	9	8	9	8	2	3	2	3
5	3	3	5	4	6	8	9	6
2	3	5	2	5	4	4	5	4
8	9	8	7	6	9	6	9	8

We Meet Division Again

In a division example, the number divided is the **dividend,** the number by which it is divided is the **divisor,** and the answer is the **quotient.** The division sign ÷ is read **divided by.**

Three ways to show division are given below.

$$\frac{6}{2}=3 \qquad 6\div 2=3 \qquad 2\overline{)6}\ 3$$

They mean the same and each may be read 6 divided by 2 equals 3.

When you divide any number by 1, the quotient is the number itself. Divide each of these numbers by 1 and say the quotients.

4 6 7 1 8 3 5 9 2 0

Copy the divisions below without the answers. Write answers for them, and check your answers with the answers in the book. Make helper cards for any that are hard for you.

$4\div 2=2$	$6\div 3=2$	$6\div 2=3$
$8\div 4=2$	$9\div 3=3$	$8\div 2=4$
$10\div 2=5$	$12\div 6=2$	$10\div 5=2$
$12\div 6=2$	$12\div 4=3$	$12\div 3=4$
$14\div 2=7$	$16\div 4=4$	$14\div 7=2$
$15\div 3=5$	$16\div 2=8$	$15\div 5=3$
$16\div 8=2$	$18\div 9=2$	$18\div 3=6$
$18\div 6=3$	$20\div 5=4$	$18\div 2=9$

Doing Tricks

Make an answer column disappear by covering it with a piece of paper.

Write the answers on the paper as you divide down the column.

Make the book's answers appear again by removing the paper. Check the answers you wrote with the book's answers.

Make helper cards for any of these division facts that are hard for you.

$21 \div 7 = 3$	$20 \div 4 = 5$	$21 \div 3 = 7$
$24 \div 6 = 4$	$25 \div 5 = 5$	$24 \div 4 = 6$
$24 \div 3 = 8$	$27 \div 9 = 3$	$24 \div 8 = 3$
$30 \div 6 = 5$	$27 \div 3 = 9$	$30 \div 5 = 6$
$35 \div 5 = 7$	$28 \div 7 = 4$	$35 \div 7 = 5$
$36 \div 9 = 4$	$28 \div 4 = 7$	$36 \div 4 = 9$
$40 \div 5 = 8$	$32 \div 8 = 4$	$40 \div 8 = 5$
$45 \div 9 = 5$	$32 \div 4 = 8$	$45 \div 5 = 9$

1. There are 36 cookies and 9 children. If the cookies are divided evenly, how many will each get?

2. Mr. Mull paid \$12 for 6 fountain pens, all alike, for presents. What was the cost of each?

3. How many 3-cent stamps can one buy for 24¢?

4. Harry is making a train. He will put 4 wheels on each car. How many cars can he make with 32 wheels?

Division with a Remainder

Division that is even

$$\begin{array}{r} 5 \\ 3\overline{)15} \\ 15 \\ \hline 0 \end{array}$$ *remainder*

Division that is not even

$$\begin{array}{r} 5 \\ 3\overline{)17} \\ 15 \\ \hline 2 \end{array}$$ *remainder*

In even division, the remainder is 0. That is, there really is no remainder. In division that is not even, there is a remainder that is different from 0.

1. Count by 2's to 18. Begin 2, 4, 6, . . . Show that each of these numbers can be divided evenly by 2.

2. Count by 2's to 19. Begin 3, 5, 7, . . . Show that no one of these numbers can be divided evenly by 2. What is the remainder in each division?

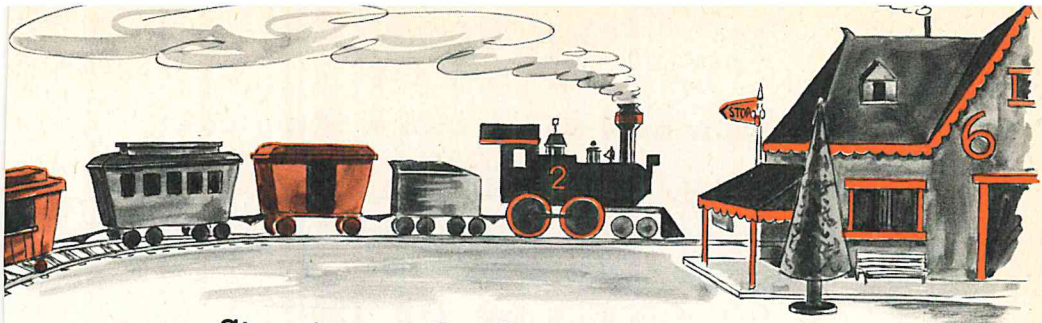
(2)	(4)	(6)	(8)	(10)	(12)	(14)	(16)	(18)
3	5	7	9	11	13	15	17	19

3. Count by 3's to 27. Begin 3, 6, 9, . . . Show that these numbers can be divided evenly by 3.

4. Count by 3's to 28. Begin 4, 7, 10, . . . Show that no one of these numbers can be divided evenly by 3. What is the remainder in each division?

5. Count by 3's to 29. Begin 5, 8, 11, . . . Show that no one of these numbers can be divided evenly by 3. What is the remainder in each division?

(3)	(6)	(9)	(12)	(15)	(18)	(21)	(24)	(27)
4	7	10	13	16	19	22	25	28
5	8	11	14	17	20	23	26	29



Stopping at the Station Number

To divide 7 by 2 you must think back to 6, for 6 is the largest number less than 7 that can be divided evenly by 2. We call such a number a **station number.** Station numbers are shown in red on page 64 and on later pages.

Divide the station number 6 by 2. This gives the quotient 3.

Subtract the station number 6 from the given dividend 7. This gives you the remainder 1.

1. Tell the station number when you divide each of the following numbers by 2. Then give the quotient and the remainder.

3 9 11 5 7 13 17 19 15

Tell the station number when you divide each of these numbers by 3. Say the quotient and remainder.

2. 13 23 11 16 25 10 26 20 18

3. 7 19 22 14 8 28 5 17 29

Rules for Division with a Remainder

I. Think back to the nearest station number.

II. Divide this station number by the divisor that is given to find the quotient.

III. Subtract the station number from the given dividend to find the remainder.

Division by 4 and 5 with a Remainder

1. Count by 4's to 36. Begin 4, 8, 12, . . . Show that these numbers are the station numbers for 4.

2. Study this table of numbers.

(4)	(8)	(12)	(16)	(20)	(24)	(28)	(32)	(36)
5	9	13	17	21	25	29	33	37
6	10	14	18	22	26	30	34	38
7	11	15	19	23	27	31	35	39

3. When you are dividing by 4, what is the station number for 22? For 35? For 13? For 30?

4. Count by 5's to 45. Begin 5, 10, 15, . . . Show that these numbers are the station numbers for 5.

5. Study this table of numbers.

(5)	(10)	(15)	(20)	(25)	(30)	(35)	(40)	(45)
6	11	16	21	26	31	36	41	46
7	12	17	22	27	32	37	42	47
8	13	18	23	28	33	38	43	48
9	14	19	24	29	34	39	44	49

6. When you are dividing by 5, what is the station number for 27? For 34? For 43? For 19?

Tell the station number; then give the quotient and the remainder for each of these divisions.

7.	$27 \div 4$	$21 \div 5$	$15 \div 2$	$17 \div 3$
8.	$11 \div 3$	$28 \div 3$	$33 \div 5$	$25 \div 4$
9.	$31 \div 5$	$23 \div 4$	$37 \div 5$	$19 \div 3$
10.	$21 \div 4$	$26 \div 3$	$29 \div 4$	$32 \div 5$
11.	$17 \div 5$	$19 \div 4$	$38 \div 4$	$17 \div 2$
12.	$11 \div 4$	$28 \div 5$	$13 \div 3$	$49 \div 5$

Did They Add, Subtract, Multiply, or Divide?

Tom and Ellen are taking care of the house while their mother is on a trip. Help them with their problems.

1. Ellen bought 24 cookies. If there will be 4 persons at dinner, how many cookies will each one get?

2. There are some large oranges at the store costing 5¢ each. What will Tom pay for a dozen?

3. The family use 4 eggs a day. How many eggs must Ellen buy to last a week?

4. How many cakes of soap at 6¢ a bar can she buy for 25¢ and how much will she have left?

5. Tom bought a can of peaches for 23¢. He gave the grocer 50¢. How much change should he receive?

6. Tom spent 12¢ for bread, 47¢ for meat, and 20¢ for butter. How much did he spend?

7. Tomatoes cost 4¢ each. How many can Ellen buy for 15¢? How much will she have left over?

8. Grapefruit cost 7¢ each. How many can Tom buy if he has 30¢? How much will he have left over?

9. Tom bought 10 lb. of potatoes, 2 lb. of coffee, 5 lb. of sugar, and 3 lb. of pork chops. How many pounds did he have to carry?

Writing Down All the Work in Division

Study the examples of even division and division with a remainder at the top of page 64 and read again the rules for division with a remainder at the bottom of page 65. Study, too, the examples below.

1.

Divisor $5\overline{)39}$ — *7 quotient; 39 dividend; 35 station number; 4 remainder*

2.

$$4\overline{)31}\quad 7,\ 28,\ 3$$

Copy and divide. Show all work as in 2 above.

3.	$4\overline{)19}$	$5\overline{)23}$	$2\overline{)15}$	$3\overline{)11}$	$4\overline{)14}$
4.	$5\overline{)37}$	$3\overline{)28}$	$4\overline{)17}$	$5\overline{)42}$	$2\overline{)19}$
5.	$3\overline{)26}$	$4\overline{)25}$	$5\overline{)39}$	$4\overline{)38}$	$3\overline{)16}$
6.	$5\overline{)16}$	$4\overline{)33}$	$3\overline{)25}$	$5\overline{)26}$	$4\overline{)37}$
7.	$4\overline{)29}$	$5\overline{)48}$	$4\overline{)19}$	$3\overline{)28}$	$5\overline{)41}$

To Be Copied in Your Arithmetic Notebook

Copy these words carefully in your notebook. Be sure that you spell each correctly and that you know the meaning of each.

sum	difference	product
divisor	dividend	arithmetic
quotient	remainder	problem

Review of the First Quarter's Work

A quarter means one-fourth. About one-fourth of the school year has passed. Let us see how well you can do what you have learned this quarter.

Write your answers on folded paper. When you have finished the page, check your answers with the blackboard.

Add.

1.

	6		75		73	534
8	3	15	38	382	706	9
6	5	32	17	154	90	67
5	8	43	91	605	817	110
9	2	61	60	198	23	8

Subtract.

2.

78	45	32	50	761	834	925
32	28	23	19	238	562	456

3.

17	15	13	16	893	715	622
9	6	7	4	345	209	543

Multiply.

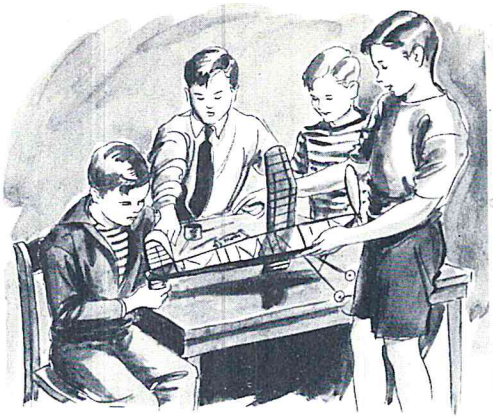
4.

67	43	96	84	435	210	504
4	3	5	2	6	9	7

5.

34	51	20	42	135	253	530
6	9	8	7	8	6	4

Making Toy Airplanes



1. Tom made three airplanes. He paid $1.75 for the first kit, $2.00 for the second, and $2.50 for the third. How much did he spend for the three kits?

2. The store had a large toy plane exactly like the real Curtis Hawk. The toy plane had a wing spread of 144 inches. The real Hawk has a wing spread that is 4 times as wide as the toy. How many inches is the wing spread of the real Hawk?

3. Explain what is meant by "wing spread."

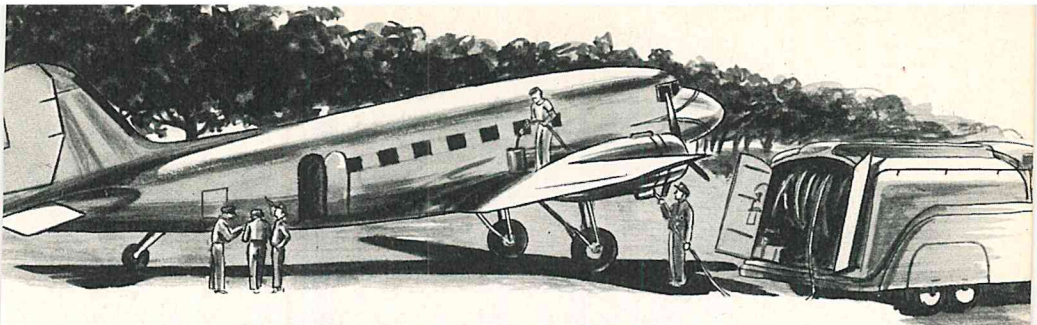
4. Paste pictures of planes in your notebook. Name as many parts of each plane as you can.

5. Bobby made a toy plane having a wing spread of 18 inches. The wing spread of Billy's toy was 6 inches less than Bobby's toy. How wide was the wing spread of Billy's plane?

6. Bobby paid 25¢ for a tube of rubber cement, 10¢ for some wire, 9¢ for glue, and 35¢ for a can of red paint. How much did he spend in all?

7. Tommy bought 24 sheets of sandpaper. If he divided it equally among 4 boys, how many sheets did each get?

8. When Tommy was flying one of his planes, it crashed. It cost him $.57 to repair it. If he paid $1.75 for the plane when he made it, how much did he spend in all on this plane?



Problems About Real Planes

1. A pilot stopped three times to buy gasoline. He bought 53 gal., 65 gal., and 57 gal. How many gallons did he buy in all?

2. The air distance between Chicago and New York is 725 miles. A pilot made three hops in going from Chicago to New York. The first hop was 315 mi. The second was 210 mi. The last was 200 mi. Was he in New York by this time?

3. The air distance from New York to Los Angeles is 2,625 mi. If you fly from New York to Los Angeles and back again, how many miles must you fly?

4. The Night Bird carries 16 sleeping passengers, 9 sitting passengers, 2 pilots, and 5 other helpers. How many can it carry in one flight?

5. The Skysleeper can carry 26 sleeping passengers. How many more sleeping passengers does it carry than the Night Bird?

6. The Tiny Tripper carries only 6 passengers on a trip. The Yankee Clipper carries 74 passengers. How many more can the Yankee Clipper carry?

7. When empty, the Tiny Tripper weighs 5,960 lb. It can carry a load of 2,990 lb. How much does the Tiny Tripper weigh when loaded?

Multiplication Facts

The 100 multiplication facts may be shown in one table. You have not yet learned the 16 facts in the lower right corner. You should know the rest.

In the table below, each red number is across from a black number and under a black number. The red number is the product of these two black numbers. For example, to find the product of 4 times 6 look across from 4 and under 6.

	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	10	12	14	16	18
3	0	3	6	9	12	15	18	21	24	27
4	0	4	8	12	16	20	24	28	32	36
5	0	5	10	15	20	25	30	35	40	45
6	0	6	12	18	24	30				
7	0	7	14	21	28	35				
8	0	8	16	24	32	40				
9	0	9	18	27	36	45				

Copy the black part of the table above. Then close your book and try to fill in the part that is red.

Play this game with a partner. Read a red number from the table, as 12. Ask what two numbers from 1 to 9 will give 12 when they are multiplied. The complete answer is, 3 times 4, 4 times 3, 2 times 6, and 6 times 2.

First Round-Up for Unit 3

Write the answers.

1. $2\times3+1$ $\quad 5\times2+3$ $\quad 4\times6+2$ $\quad 3\times8+2$

2. $4\times9+3$ $\quad 7\times5+1$ $\quad 3\times6+1$ $\quad 5\times9+4$

Write the products.

3.

38	74	43	75	354	409	763
$\times\ 4$	$\times\ 5$	$\times\ 6$	$\times\ 3$	$\times\ 8$	$\times\ 4$	$\times\ 5$

4.

80	43	56	39	746	630	208
$\times\ 5$	$\times\ 9$	$\times\ 4$	$\times\ 3$	$\times\ 2$	$\times\ 4$	$\times\ 5$

Write the quotients.

5. $2\overline{)18}$ $\quad 4\overline{)20}$ $\quad 5\overline{)35}$ $\quad 6\overline{)18}$ $\quad 9\overline{)27}$

6. $5\overline{)10}$ $\quad 8\overline{)40}$ $\quad 3\overline{)21}$ $\quad 7\overline{)28}$ $\quad 4\overline{)32}$

Write the quotients and remainders.

7. $3\overline{)11}$ $\quad 4\overline{)23}$ $\quad 5\overline{)34}$ $\quad 2\overline{)17}$ $\quad 3\overline{)28}$

8. $5\overline{)13}$ $\quad 4\overline{)38}$ $\quad 3\overline{)23}$ $\quad 5\overline{)29}$ $\quad 4\overline{)31}$

Work page 74 if you made more than four mistakes.

Work page 75 if you did not make more than four mistakes.

Catching Those That Got Away

Write the answers quickly. If you miss even one in a row, study the page marked on the fence at the end of the row.

If these get away				go over the fence and get them
1. 0×3	5×1	7×0	1×8	54
2. 2×8	3×6	9×2	5×4	55
3. 9×4	4×7	8×3	3×9	56
4. $6\times3+1$	$4\times7+3$	$9\times2+2$	$5\times6+4$	58
5. $2\times8+1$	$7\times2+3$	$3\times7+2$	$8\times4+3$	59, 60
6. $14\div2$	$16\div8$	$18\div3$	$12\div6$	64, 65
7. $36\div9$	$28\div4$	$32\div8$	$24\div3$	64, 65
8. $13\div3$	$11\div2$	$26\div3$	$17\div2$	66
9. $21\div4$	$35\div4$	$19\div4$	$15\div4$	68
10. $17\div5$	$41\div5$	$18\div5$	$26\div5$	68

11. Find a running mate. Try to do races 1, 2, and 3 on pages 61 and 62 in three minutes.

12. Try exercises 3 to 7 on page 68.

Roping the Tough Ones

Ask yourself, "Must I add, subtract, or multiply to find the answer?"

1. Uncle Shorty's brother has a sheep ranch. He has 9,500 sheep this year. Last year he had 8,350 sheep. How many more has he this year?

2. He loses about 28 sheep each month. How many will he lose in 6 months?

3. A helper clipped 275 sheep in one day. How many can he clip in 5 days?

4. A new man on the ranch cannot clip very fast. He can clip only 235 sheep a day. How many sheep will he clip in 7 days?

5. The wool clipped from one sheep weighs about 8 lb. How much will the wool from 576 such sheep weigh?

6. In the morning 3,096 pounds of wool were clipped. In the afternoon 2,045 lb. were clipped. How many pounds did the men clip that day?

7. Multiply every number in Row A by every number in Row B.

Row A	549	137	468	962	537	951	573	842
Row B	4	7	3	8	2	9	5	6

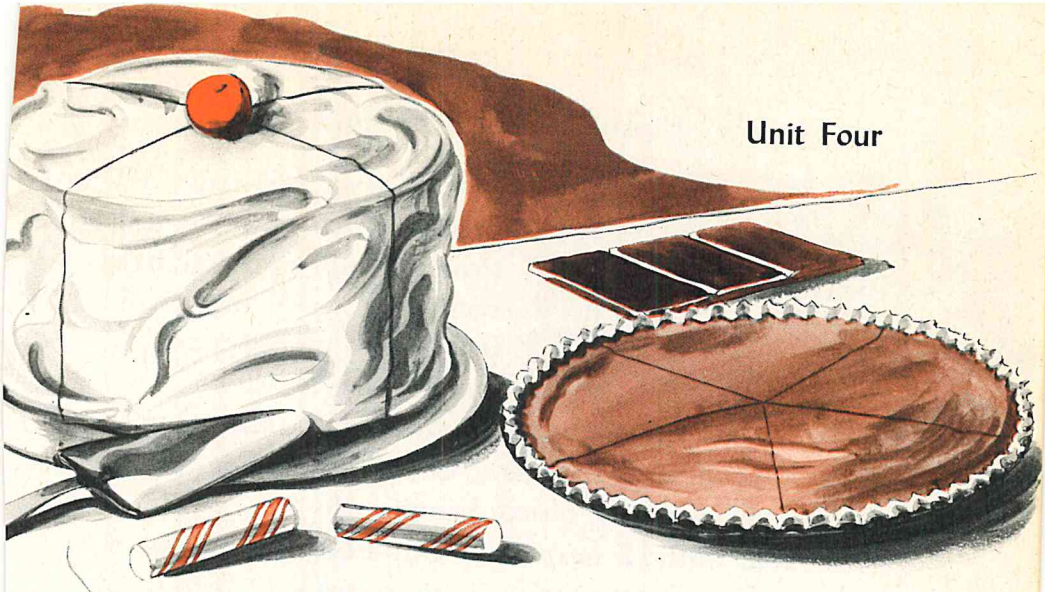
Last Round-Up for Unit 3

Write the products on folded paper.

1.	34 × 2	23 × 3	12 × 4	35 × 5	214 × 2	401 × 3	322 × 4
2.	31 × 6	40 × 7	50 × 8	70 × 5	342 × 2	320 × 3	401 × 4
3.	46 × 2	39 × 3	77 × 4	83 × 5	248 × 2	527 × 3	219 × 4
4.	59 × 3	63 × 4	81 × 5	72 × 3	173 × 4	213 × 9	605 × 5
5.	82 × 4	97 × 5	18 × 3	45 × 6	504 × 7	370 × 4	521 × 8

Divide each number in a row by the number in black type at the end of the row. Write quotients and remainders. If the division is even, write 0 for the remainder.

6.	7	10	13	11	17	15	9	**2**
7.	11	28	20	17	13	22	25	**3**



Finding Equal Parts of a Whole

1. If a stick of candy is broken into two equal parts, each part is one-half of the stick. One half is written in figures as $\frac{1}{2}$.

2. Draw a pie and divide it into halves.

3. If a candy bar is divided into three equal parts, each part is one third of the candy bar. One third is written in figures as $\frac{1}{3}$.

4. Draw a candy bar and divide it into thirds.

5. Into how many equal parts has the cake on the table been divided? What is each part called? Write one fourth in figures.

6. Draw a cake. Color $\frac{1}{4}$ of it yellow.

7. The pie on the table is cut into five equal parts. Each part is one-fifth of the whole pie. Write one fifth in figures.

Finding Equal Parts of Several Things

1. Mary divided 10 cookies into 2 equal stacks. Each of the stacks contained $\frac{1}{2}$ of the cookies. How many cookies were in each stack?

To find $\frac{1}{2}$ of a number divide the number by 2.

2. Jerry had 6 rabbits. One-half of them were black. How many black rabbits did he have?

3. Tom had 12 marbles. One-half of them were green. How many marbles were green? Draw 12 marbles. Color $\frac{1}{2}$ of them green.

4. Jane had eight pennies. She spent $\frac{1}{4}$ of them. How many pennies did she spend?

To find $\frac{1}{4}$ of a number divide the number by 4.

5. Draw 12 squares. Color $\frac{1}{4}$ of them black.

6. Harry had 9 lead pencils. One-third of them were yellow. How many pencils were yellow?

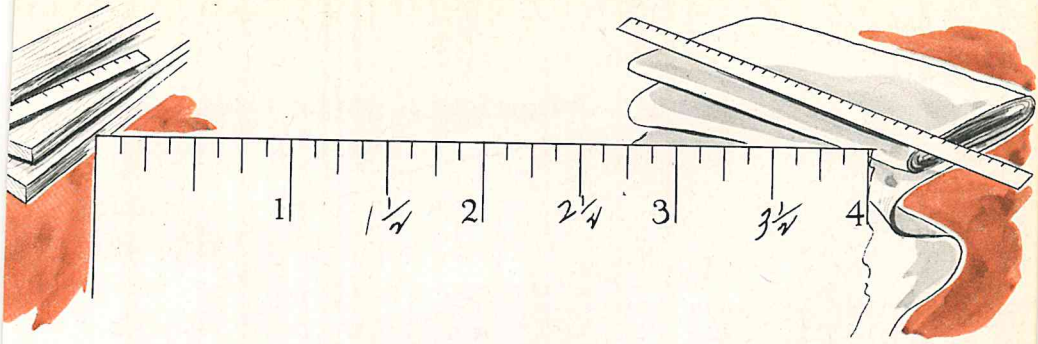
How do you find $\frac{1}{3}$ of a number?

7. Draw fifteen circles. Color $\frac{1}{3}$ of them red. How many are red?

8. Draw 6 apples. Color $\frac{1}{3}$ of them green. How many apples are green?

9. Mary had eight pennies. She spent $\frac{1}{4}$ of them. How many pennies did she spend?

10. Ruth had 12 colored leaves. One-third of them were red. How many leaves were red? Draw 12 leaves. Color $\frac{1}{3}$ of them red.



Length Measure for Distances

12 inches (in.) = 1 foot (ft.)
3 feet = 1 yard (yd.)

1. Name something you would measure in inches.

2. Name something you would measure in feet.

3. Name something you would measure in yards.

4. How many inches are there in $\frac{1}{2}$ foot? In $\frac{1}{3}$ foot? In $\frac{1}{4}$ foot?

5. How many inches are there in 1 yard?

6. What is the name of one-third yard?

The short form, or abbreviation, for the name of a unit of measure is the same for one or for more than one: 1 doz. or 3 doz.; 1 yd. or 5 yd.; 1 ft. or 7 ft.; 1 pt. or 3 pt.

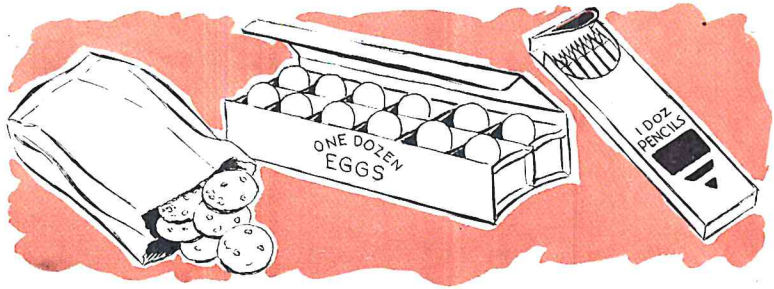
7. Give a rule for finding $\frac{1}{2}$ of a number; $\frac{1}{3}$ of a number; $\frac{1}{4}$ of a number; $\frac{1}{5}$ of a number.

8. Find $\frac{1}{2}$ of 4; 8; 16; 10; 6; 8; 12; 18.

9. Find $\frac{1}{3}$ of 9; 12; 18; 15; 27; 24; 6; 21.

10. Find $\frac{1}{4}$ of 12; 20; 32; 24; 36; 16; 8; 28.

11. Find $\frac{1}{5}$ of 15; 30; 20; 35; 10; 25; 40; 45.



By the Dozen

You count things by the dozen:

12 things = 1 dozen (doz.)

1. Name six things bought by the dozen.

2. How many cookies are in $\frac{1}{2}$ dozen? In $\frac{1}{3}$ dozen? In $\frac{1}{4}$ dozen?

3. Draw a dozen eggs. Show that $\frac{1}{3}$ of them are broken. How many eggs are broken?

4. Tom bought $\frac{1}{2}$ dozen rolls. How many did he get?

5. Mother bought a dozen oranges. $\frac{1}{6}$ of them were bad. How many oranges were bad? What do you do to find $\frac{1}{6}$ of a dozen?

6. There are a dozen cup cakes on each plate in the store. How many are there on 3 plates?

7. Mother bought 2 dozen eggs from the farmer. How many eggs did the farmer sell to her?

8. There are a dozen pencils in a package. How many pencils will there be in 5 packages?

9. There are a dozen eggs in a box. How many eggs did the grocer buy if he bought 9 boxes?

10. If one package contains a dozen cookies, how many cookies will there be in 8 packages?

Liquid Measure for Things You Pour

2 cups = 1 pint (pt.)
2 pints = 1 quart (qt.)
4 quarts = 1 gallon (gal.)

1. Name six things that you buy by the pint, quart, or gallon.

2. If you pour a gallon of milk into quart bottles, how many quart bottles will you fill?

3. If you pour a pint of milk into cups, how many cups will you fill?

4. If you pour a quart of milk into cups, how many cups will you fill?

5. What is the name of one-fourth gallon?

6. What is the name of $\frac{1}{2}$ of a quart?

7. Mother wanted a quart of milk. The milkman did not have any quart bottles of milk. What could he leave instead of a quart bottle?

8. Mother poured 3 pints of milk into cups for some children to drink. How many cups did she fill?

9. Mother made 12 quarts of canned tomatoes. She found she had no quart jars. How many pint jars did she fill?

10. Father bought 2 gallons of paint. How many quarts of paint did he buy?

11. If I drink a pint of milk a day, how many days will a quart of milk last me?

12. Look for pictures showing things being measured. Cut them out and put in your notebook.

Our Multiplication Is Growing Up

Multiplying is a short way of adding

Two 6's are 12

Three 6's are 18

Four 6's are 24

Five 6's are 30

Six 6's are 36

Study these new multiplication facts about 6's and 7's. Be able to say each one quickly. Make helper cards for any that are hard for you.

$6 \times 7 = 42$	$6 \times 6 = 36$	$7 \times 6 = 42$
$6 \times 8 = 48$	$7 \times 7 = 49$	$8 \times 6 = 48$
$9 \times 6 = 54$	$8 \times 7 = 56$	$6 \times 9 = 54$
$7 \times 9 = 63$	$7 \times 8 = 56$	$9 \times 7 = 63$

Before coming to Unit 4, you had learned all except 16 multiplication facts. Study the table on page 72 again. After learning the 12 new facts about 6's and 7's, how many facts are left to learn?

For Your Notebook

Write all the multiplication facts about 6. Begin $6 \times 0 = 0$, $6 \times 1 = 6$, and go up to $6 \times 9 = 54$.

Write all the multiplication facts about 7. Begin $7 \times 0 = 0$, $7 \times 1 = 7$, and go up to $7 \times 9 = 63$.

Multiplication Practice and Problems

Study these 4 multiplication facts again. Learn them so well that you will never say one wrong or write it wrong.

6	6	7	7
6	7	6	7
36	42	42	49

Study these times-and facts until you can say each one quickly. Read the first one, 6 times 6 and 3 are 39.

1. $6\times6+3$ $6\times6+4$ $6\times7+3$ $6\times7+4$
2. $7\times6+3$ $7\times6+4$ $7\times7+3$ $7\times7+4$

Multiply. Write the products on folded paper.

3.	66	67	76	66	676	766	677
	6	7	6	7	6	7	6
4.	77	67	76	77	767	677	766
	7	6	7	6	7	7	6

5. If a book has 256 pages, how many pages are in 6 such books? In 9 such books?

6. Mr. Hale needed 6 pieces of wire each 27 feet long for a fence. How many feet of wire in all did he need?

7. A bag of flour weighs 24 pounds. How much will 7 such bags weigh?

8. If there are 47 apples in a small box, how many are there in 6 such boxes?

9. If one bag of corn on the cob weighs 76 pounds, how much will 7 bags of corn on the cob weigh?

More Multiplication Practice and Problems

Study these 4 multiplication facts again. Learn them so well that you will never say one wrong or write it wrong.

6	8	7	8
8	6	8	7
48	48	56	56

Study these times-and facts until you can say each one quickly.

1.	6×6+5	7×6+6	7×8+3	8×7+3
2.	6×7+5	7×8+5	8×7+4	6×8+3
3.	8×7+6	8×6+5	7×6+5	7×8+4
4.	8×7+5	6×8+4	7×7+5	8×7+2
5.	8×6+3	8×7+7	7×8+6	6×8+5
6.	7×7+6	8×6+6	8×6+7	8×6+4

Multiply. Write the products on folded paper.

7.	68	86	66	88	786	867	678
	6	7	8	6	7	6	7
8.	68	86	66	88	686	868	667
	7	6	6	7	6	7	8
9.	76	77	78	87	777	666	676
	8	7	6	7	6	7	6

10. Russell was making some shelves. He needed 6 boards each 38 inches long. What was the total length of the boards he needed?

11. There are 7 crates of machinery in a freight car. Each crate weighs 876 pounds. What is the total weight?

Naming the Product

1. Nell, Ruth, Dick, and Ross are each 9 years old. What is the sum of their ages?

Nell 9 years
Ruth 9 years
Dick 9 years
Ross 9 years
Sum 36 years

Multiplication is a short way of adding. You can find the total age of Nell, Ruth, Dick, and Ross together by multiplying 9 years by 4. In this example, 9 years is the **multiplicand** and 4 is the **multiplier.** *The multiplier is never named.* When the multiplicand has a name, the product will have the same name.

9 years
4
36 years

In working the problems below, write in the name of the multiplicand and the product.

2. Fred fed his dog 7 cents' worth of meat a day. How much does it cost to feed the dog in 6 days?

3. Lois fed her kitten 6 cents' worth of meat a day. How much does it cost to feed the kitten in 7 days?

4. The Hicks family use 75 pounds of ice a day. How much will they use in 7 days?

5. If Frank drives at the rate of 37 miles an hour, how many miles will he drive in 8 hours?

6. If you read 64 pages a day, how many pages can you read in 8 days?

7. There are 52 weeks in a year. How many weeks are there in 9 years?

Still More Multiplication Practice and Problems

Study these 4 multiplication facts again. Learn them so well that you will never say one wrong or write it wrong.

6	9	7	9
9	6	9	7
54	54	63	63

Study these times-and facts until you can say each one quickly.

1.	6×9+3	9×6+3	7×9+3	9×7+3
2.	6×9+4	9×6+4	7×9+4	9×7+4
3.	6×9+5	9×6+5	7×9+5	9×7+5
4.	6×9+2	9×6+6	7×9+6	9×7+6
5.	9×6+7	9×7+7	9×6+8	9×7+8

Multiply. Write the products on folded paper.

6.	69	96	99	67	679	796	676
	6	6	6	9	6	7	9
7.	76	79	97	99	767	697	769
	9	7	7	7	9	7	6

8. A water tank holds 976 gallons. How much will 6 such tanks hold?

9. Lucy has 9 books. There are 272 pages in each. How many pages in all in the books?

10. Mary has 9 books. There are 256 pages in each. How many pages in all in the books?

11. It is 488 miles from Minneapolis to Kansas City. How many miles does one travel in making 7 trips between these two cities?

Multiplication Problems

1. A bucket of lard weighs 8 pounds. Find the weight of 24 such buckets of lard.

One Way
8 pounds
24

Easier Way
24
8
192 pounds

2. If one fruit cake weighs 6 pounds, how much will 25 fruit cakes weigh?

3. If there are eight buttons on a card, how many buttons are on 42 cards?

4. If there are 6 bananas in a bunch, how many bananas will there be in 15 bunches?

5. If there are 9 cookies in each package, how many cookies will there be in 65 packages?

6. A brick is 8 inches long. How far will 24 bricks reach if placed end to end?

7. There are 48 bags of coffee in a case. Each bag weighs 3 pounds. What does a case weigh?

8. Find the cost of 56 pounds of beans at 9 cents a pound.

9. Bricks are 4 inches wide. How far will 68 bricks reach if placed side by side?

10. How many gallons of milk can be put into 17 eight-gallon cans?

11. A dress shop uses 6 buttons on a certain kind of dress. How many buttons would the shop use on 288 such dresses?

12. There are 7 days in a week. How many days are there in 52 weeks?

Do You Know Your Money?

All paper money of the United States is printed in a building in Washington, D. C. There is a kind of paper money for each of these amounts: $1, $2, $5, $10, $20, $50, $100, $500, $1,000, $5,000, and $10,000. The pictures on each are different.

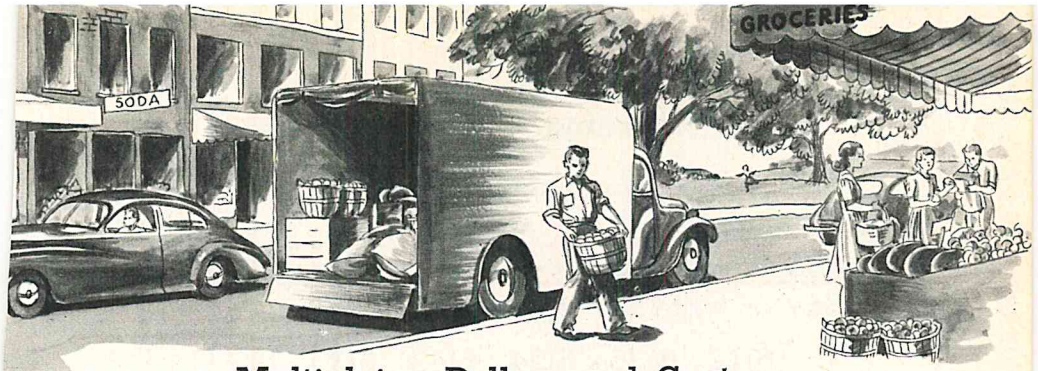
Amount	Front	Back
$1	Washington	"One" and U. S. Seal
$2	Jefferson	Monticello (Jefferson's home)
$5	Lincoln	Lincoln Memorial
$10	Hamilton	U. S. Treasury
$20	Jackson	White House
$50	Grant	U. S. Capitol
$100	Franklin	Independence Hall

It has been found that, on the average, a 1-dollar bill is worn out in 6 months. A 2-dollar bill lasts 11 months, a 5-dollar bill lasts 13 months, a 10-dollar bill lasts 18 months, and a 20-dollar bill lasts 30 months. Why do the bills for larger amounts last longer than the bills for smaller amounts?

Metal money is coined at Philadelphia, Denver, and San Francisco. There is a coin for each of these amounts: 1¢, 5¢, 10¢, 25¢, 50¢ and $1. The 1-cent piece is mostly copper; the 5-cent piece is about one-fourth nickel and the rest copper. The other coins are mostly silver.

What paper money and what coins could you use to make these amounts?

$18.38 $7.59 $3.95 $44.75 $97.50



Multiplying Dollars and Cents

1. The grocer bought 7 watermelons at 73¢ each. What did he pay for them?

It is better to write 73¢ using the dollar sign because your answer will be more than a dollar and you will need the dollar sign to write your answer.

$0.73
7
$5.11

The product is $5.11. Be sure to write the dollar sign before the product. Put the cents point exactly under the cents point in the multiplicand.

2. Large oranges cost 67 cents a dozen. What will your grocer pay for 6 dozen? How will you write 67 cents? Why?

3. The grocer bought 6 bushels of apples at $0.95 a bushel. How much did he pay for them?

4. Find the cost of 7 bushels of peaches at $2.89 a bushel.

5. A sack of sugar costs $5.12. What will your grocer pay for 6 sacks?

If your answer is less than a dollar, you may use the cents sign.

If your answer is a dollar or more, use the dollar sign in writing cents.

Learning to Divide by 6

Study these four new division facts until you know them.

$36 \div 6 = 6 \quad 42 \div 6 = 7 \quad 48 \div 6 = 8 \quad 54 \div 6 = 9$

Say or write the quotients.

1. $6\overline{)12}$ $6\overline{)36}$ $6\overline{)24}$ $6\overline{)42}$ $6\overline{)30}$ $6\overline{)6}$

2. $6\overline{)54}$ $6\overline{)48}$ $6\overline{)18}$ $5\overline{)30}$ $4\overline{)24}$ $6\overline{)0}$

3. Divide each of these numbers by 6. Say the quotients.

12 6 36 54 30 18 24 48 42

When you divide 17 by 6, you must think back to 12, for 12 is the station number. If you have forgotten about station numbers, study page 65 again. What is the quotient, and what is the remainder when you divide 17 by 6?

Divide each number in the table below by 6. For each, give the station number, the quotient, and the remainder.

	a	b	c	d	e	f	g	h	i
4.	6	12	18	24	30	36	42	48	54
5.	7	13	19	25	31	37	43	49	55
6.	8	14	20	26	32	38	44	50	56
7.	9	15	21	27	33	39	45	51	57
8.	10	16	22	28	34	40	46	52	58
9.	11	17	23	29	35	41	47	53	59

What is the station number for each number in column d? What is the quotient?

What is the remainder for each number in row 7?

Watch Our Division Grow

1. Divide 49 by 6.

Think back to 48. Why? There are eight 6's in 48. The difference between 48 and 49 is 1. Thus the answer is: quotient **8**, remainder **1**. Notice how they are written in the example.

$$\begin{array}{r} 8 \text{ r } 1 \\ 6\overline{)49} \\ 48 \\ \hline 1 \end{array}$$

Use the pattern above and divide each of the following numbers by 6.

37	41	47	17	13	22	56	53
45	33	14	25	39	59	28	21

2. Divide 498 by 6.

Begin the division as in the example at the top of the page. There will be two figures in the quotient. Write the first quotient figure **8** above 9 of 49. Bring down the 8 of 498 and write it by the remainder 1 to make 18. There are three 6's in 18. Write the second quotient figure **3** above the 8 of 498. The complete quotient is **83**.

$$\begin{array}{r} 83 \\ 6\overline{)498} \\ 48 \\ \hline 18 \\ 18 \\ \hline \end{array}$$

Check

$$\begin{array}{r} 83 \\ \times\ 6 \\ \hline 498 \end{array}$$

To check, you may multiply 83 by 6. The product is 498, and the example checks.

Use the pattern of example 2 above. Divide each of the following numbers by 6. Check.

3.	372	258	264	198	324	570
4.	156	228	282	348	414	504

Learning to Divide by 7

Study these four new division facts until you know them.

$42 \div 7 = 6$ $49 \div 7 = 7$ $56 \div 7 = 8$ $63 \div 7 = 9$

Say or write the quotients.

1. $7\overline{)7}$ $7\overline{)35}$ $7\overline{)14}$ $7\overline{)42}$ $7\overline{)63}$ $7\overline{)21}$

2. $7\overline{)0}$ $7\overline{)49}$ $7\overline{)56}$ $4\overline{)28}$ $7\overline{)28}$ $5\overline{)35}$

3. Divide each number below by 7. Say or write the quotients.

63 49 35 21 56 42 28 14

Divide each number in the table below by 7. For each, give the station number, the quotient, and the remainder.

	a	b	c	d	e	f	g	h	i
4.	7	14	21	28	35	42	49	56	63
5.	8	15	22	29	36	43	50	57	64
6.	9	16	23	30	37	44	51	58	65
7.	10	17	24	31	38	45	52	59	66
8.	11	18	25	32	39	46	53	60	67
9.	12	19	26	33	40	47	54	61	68
10.	13	20	27	34	41	48	55	62	69

11. What is the station number for all the numbers in column b? In column h?

12. What is the quotient for each number in column c? In column f?

13. What is the remainder for each number in row 6? In row 9?

Our Division Grows More

1. Divide 65 by 7.

Think back to 63. Why? The quotient is **9**. Why? The remainder is **2**.

$$\begin{array}{r} 9 \text{ r } 2 \\ 7\overline{)65} \\ 63 \\ \hline 2 \end{array}$$

To check, you multiply 9 by 7 and add 2.

Check

$$\begin{array}{r} 9 \\ \times\ 7 \\ \hline 63 \\ +\ 2 \\ \hline 65 \end{array}$$

Use the pattern above and divide each of the following numbers by 7. Check.

2. 50 66 36 24 57 27 37 47

3. 31 22 15 29 13 30 40 62

4. Divide 581 by 7.

In finding the first quotient figure, think back to 56. Why? Write the first quotient figure **8** above 8 of 58, and write 56 under 58. The remainder is 2.

$$\begin{array}{r} 83 \\ 7\overline{)581} \\ 56\downarrow \\ \hline 21 \\ 21 \\ \hline \end{array}$$

Check

$$\begin{array}{r} 83 \\ \times\ 7 \\ \hline 581 \end{array}$$

Bring down the 1 of 581 and write it by the remainder 2 to make 21. There are three 7's in 21. Write this second quotient figure **3** above 1 of 581. The complete quotient is **83**.

To check, you multiply 83 by 7. The product is 581, and the example checks. Why?

Divide each of the following numbers by 7. Check.

5. 518 371 245 434 609 532

6. 651 329 623 266 392 , 574

7. It takes 7 days to make a week. How many weeks are there in 371 days?

Our Division Is Still Growing

1. Divide 537 by 6.

By dividing, we find a quotient of **89** and a remainder of **3**.

To check, you multiply the quotient 89 by the divisor 6, and add the remainder 3 to this product. The answer is **537**, and the example checks.

$$\begin{array}{r} 89 \text{ r } 3 \\ 6\overline{)537} \\ 48 \\ \hline 57 \\ 54 \\ \hline 3 \end{array}$$

Check

$$\begin{array}{r} 89 \\ \times\ 6 \\ \hline 534 \\ +\ 3 \\ \hline 537 \end{array}$$

Use the pattern of example 1 above. Find the quotient and the remainder in each exercise below. Check.

2. $6\overline{)355}$ $5\overline{)364}$ $4\overline{)179}$ $7\overline{)155}$ $6\overline{)575}$

3. $7\overline{)456}$ $5\overline{)218}$ $3\overline{)167}$ $4\overline{)299}$ $7\overline{)374}$

4. $5\overline{)467}$ $6\overline{)458}$ $2\overline{)159}$ $7\overline{)587}$ $4\overline{)389}$

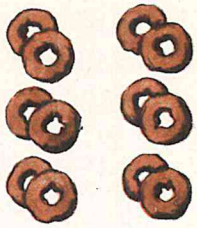
5. $6\overline{)148}$ $4\overline{)317}$ $3\overline{)269}$ $3\overline{)236}$ $6\overline{)218}$

6. How many jumping ropes each 6 feet long can be cut from a piece of rope that is 87 feet long? How many feet will be left over?

7. There are 97 pieces of candy in a box. If it is divided into 4 equal parts, how many pieces will there be in each part and how many pieces will be left over?

8. A tailor shop cuts a piece of cloth 300 feet long into 7-foot lengths. How many pieces will there be, and how much will be left over?

One-Sixth and One-Seventh



Draw a pie and divide it into 6 equal parts. Each part is one-sixth of the pie. One-sixth is written in figures as $\frac{1}{6}$.

Divide 14 cookies into 7 equal parts. Each part is one-seventh of all the cookies. One-seventh is written in figures as $\frac{1}{7}$.

1. Mrs. Ray has 12 sugar doughnuts. She will divide them equally among 6 children. What part will each child get? How many doughnuts will each child get?

2. There were 90 pieces of candy in a box. Rose took $\frac{1}{6}$ of it. How many pieces did she take?

3. Tom wants to divide a board 24 inches long into 6 equal parts. How long will each part be?

4. Bob has 60 cents in one hand and $\frac{1}{6}$ as much in the other hand. How much does he have in the other hand? How much does he have in both hands?

5. Mr. Gill earns $210 a month and saves $\frac{1}{7}$ of it. How much does he save each month?

6. Andrew had 63¢ and spent $\frac{1}{7}$ of it. How much did he spend?

7. There were 42 little girls at a party. If $\frac{1}{7}$ of them wore ribbons, how many had ribbons?

8. Give a good rule for finding $\frac{1}{6}$ of a number.

9. Use your rule to find $\frac{1}{6}$ of these numbers.

24 36 54 18 30 48 12 42

Looking Back Over Unit 4

You learned 12 new multiplication facts in this unit. You will find all of them here in exercises 1 and 2.

Write the products on folded paper.

1.	237 × 6	458 × 6	436 × 9	329 × 7	516 × 6	347 × 7
2.	527 × 8	358 × 7	506 × 7	360 × 8	409 × 6	170 × 9

You learned 8 new division facts in this unit. All of them appear in exercises 3 and 4.

Find the quotients.

3.	$366 \div 6$	$637 \div 7$	$486 \div 6$	$497 \div 7$
4.	$426 \div 6$	$427 \div 7$	$546 \div 6$	$567 \div 7$

Write the answers to the times-and facts.

5.	$6 \times 8 + 2$	$6 \times 4 + 3$	$6 \times 6 + 2$	$7 \times 8 + 2$
6.	$6 \times 7 + 2$	$7 \times 4 + 3$	$7 \times 8 + 1$	$7 \times 6 + 2$
7.	$6 \times 8 + 1$	$6 \times 7 + 1$	$7 \times 9 + 2$	$7 \times 9 + 1$
8.	$7 \times 5 + 2$	$6 \times 6 + 1$	$7 \times 7 + 2$	$6 \times 3 + 5$

Write the station numbers only for these divisions.

9.	$56 \div 6$	$54 \div 7$	$35 \div 6$	$23 \div 7$	$46 \div 6$
10.	$68 \div 7$	$53 \div 6$	$45 \div 7$	$28 \div 6$	$51 \div 7$

Write the products on folded paper.

11.	86 × 6	46 × 6	64 × 6	83 × 7	74 × 6	45 × 7	82 × 7	64 × 7

A "Numberless Problem" Quiz

Choose a good reader to be Mr. Quiz. He will read these "numberless problems" as you look at your page.

Think of the problem. Then tell Mr. Quiz how to find the answer. Will he add, subtract, multiply, or divide?

1. Mother and Father each gave me some money. What must I do to find how much they both gave me?

2. I know how many sheets of paper I had. I know how many sheets I used. What must I do to find how many sheets I have left?

3. What must I do to divide a sack of marbles equally among 5 children?

4. I bought a hat, a dress, and a pair of shoes at a store. What must the clerk do to find how much I owe the store?

5. If I know what one ticket to the show costs, how will I find how much to pay for 5 tickets?

6. If I pay $0.35 for one pair of socks, what must I do to find how much I must pay for several pairs?

7. There are 297 boys in a certain school. If I also know how many girls there are, how can I find how many children there are in that school?

8. What must I do to change gallons to quarts?

9. What must I do to change feet to inches?

10. What must I do to change pints to quarts?

Sky High

1. A pilot had 15 gal. of gasoline in the tank when he landed. He added 60 gal. before he left on the next flight. How many gallons were there in the tank when he took off on the next flight?

2. For each person on the plane 40 lb. of baggage is carried free. How much baggage is carried free for 8 persons?

3. The plane flies about 195 miles an hour. How far will it fly in 7 hours?

4. If he takes a slower plane that flies only 192 miles per hour, how far will he travel in 7 hours?

5. By air it is 405 miles from Chicago to Kansas City. It is 1,104 miles from New York to Kansas City by air. Ann flew from Chicago to Kansas City. Billy flew from New York to Kansas City. How many more miles did Billy fly?

6. Mr. Brown took a boat trip from New York to Los Angeles going through the Panama Canal. He traveled 5,677 miles. Mrs. Brown and Tommy flew from New York to Los Angeles by air. They traveled 2,625 miles. How much shorter was their trip?

7. There are 9 passengers on a plane. If each person paid $35 for his ticket, how much did they all together pay?

First Round-Up for Unit 4

Divide by 6. Write quotients and remainders.

1. 37 46 50 23 17 33 45 55

Divide by 7. Write quotients and remainders.

2. 49 62 13 51 57 69 50 41

Write the answers only.

3. $6\times6+1$ $7\times6+3$ $6\times9+2$ $7\times8+3$

Write the products.

4.

76	89	98	67	767	668	979
8	6	7	9	8	7	6

Write the quotients.

5. $6\overline{)492}$ $7\overline{)231}$ $6\overline{)984}$ $7\overline{)854}$ $6\overline{)378}$

6. $7\overline{)994}$ $6\overline{)552}$ $7\overline{)504}$ $6\overline{)474}$ $7\overline{)385}$

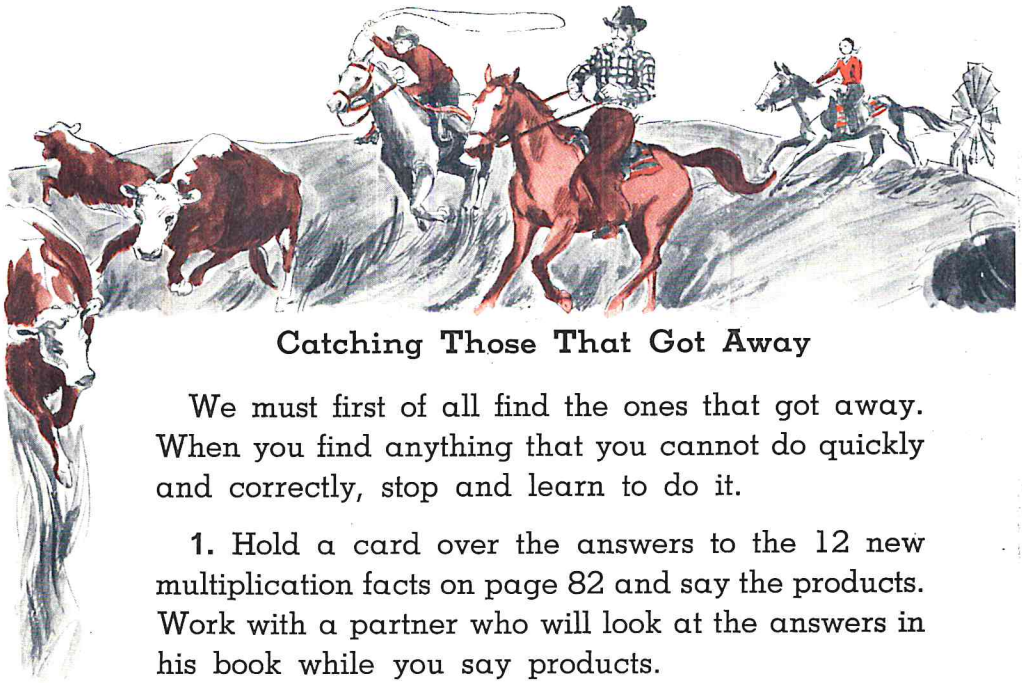
Write the answers.

7. $\frac{1}{4}$ of 16 $\frac{1}{7}$ of 14 $\frac{1}{5}$ of 35 $\frac{1}{2}$ of 12

8. $\frac{1}{6}$ of 42 $\frac{1}{7}$ of 21 $\frac{1}{6}$ of 36 $\frac{1}{4}$ of 20

If you did not miss more than four, turn to page 101: "Roping the Tough Ones."

If you did miss more than four, turn to page 100: "Catching Those That Got Away."



Catching Those That Got Away

We must first of all find the ones that got away. When you find anything that you cannot do quickly and correctly, stop and learn to do it.

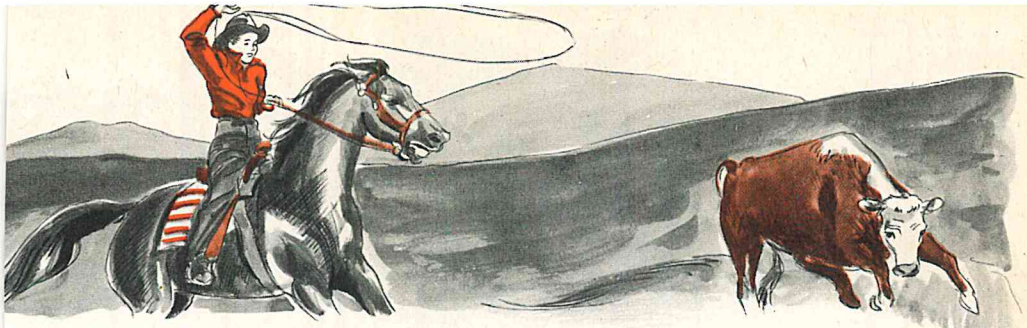
1. Hold a card over the answers to the 12 new multiplication facts on page 82 and say the products. Work with a partner who will look at the answers in his book while you say products.

2. Do you know your times-and facts? Say the answers to exercises 1 and 2, page 83; exercises 1–6, page 84; exercises 1–5, page 86 and exercises 5–8, page 96. Work with a partner.

3. Do you know how to multiply and carry? Do exercises 3 and 4, page 83; exercises 7–9, page 84; exercises 6 and 7, page 86; and exercises 1, 2, and 11, page 96. You and your partner can write the products separately and then compare answers.

4. Multiply each number in Row A by each number in Row B.

Row A	438	924	378	498	375	662
Row B	5	3	7	6	4	2



Roping the Tough Ones

1. The baker made 650 loaves of bread. If $\frac{1}{5}$ of them were whole wheat bread, how many loaves of whole wheat did he bake?

2. He put 9 dozen cup cakes on a tray. How many cup cakes were on the tray?

3. He made 288 cakes in all. If he put raisins in $\frac{1}{4}$ of them, how many raisin cakes did he bake?

4. He used 45 gallons of milk. How many quarts was this?

5. He made 72 pies. If $\frac{1}{6}$ of them were lemon pies, how many lemon pies did he bake?

6. If $\frac{1}{3}$ of the 72 pies were apple pies, how many apple pies did he bake?

7. He made 48 peach cakes. He sold $\frac{1}{6}$ of them before noon. How many was this?

8. He baked 360 doughnuts. If $\frac{1}{6}$ of them were jelly doughnuts, how many jelly ones did he bake?

9. He had 35 lb. of small cookies in the case. If one lady bought $\frac{1}{5}$ of them, how many pounds did she buy?

10. He had 750 lb. of sugar. He used $\frac{1}{6}$ of this. How many pounds did he use?

11. Work exercise 4 on page 100.

Last Round-Up for Unit 4

Write the products.

1.	765 × 6	566 × 7	576 × 6	836 × 7	569 × 7	892 × 6
2.	468 × 6	379 × 7	587 × 6	465 × 8	772 × 9	267 × 8
3.	546 × 9	987 × 7	486 × 6	376 × 8	675 × 9	938 × 7
4.	306 × 6	507 × 7	730 × 6	690 × 7	700 × 7	600 × 8

Divide these numbers by 6.

5.	504	558	402	684	792	870

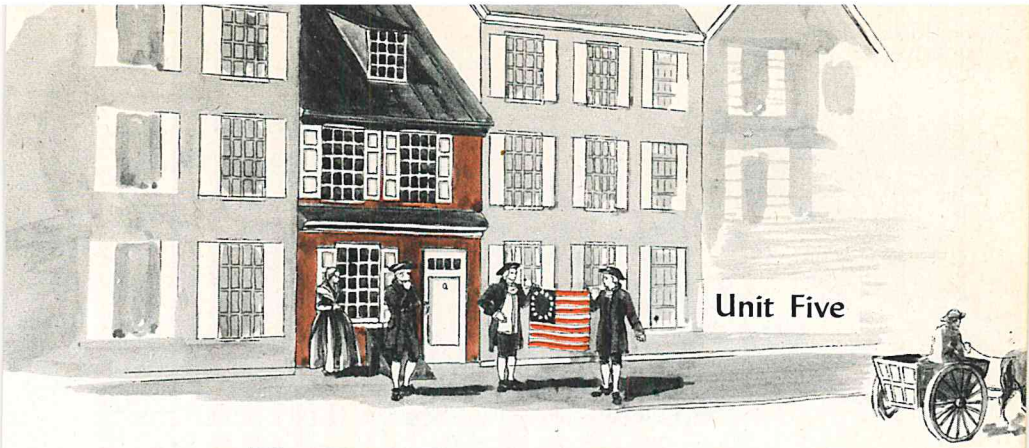
Divide these numbers by 7.

6.	427	238	511	364	315	546

7. Find $\frac{1}{6}$ of each of these numbers.

36 54 42 72 96 48 84 78

It helps a pupil find his mistakes and correct them if he marks his own paper. Have the "Last Round-Up" worked on the blackboard. Grade your paper. Play fair with yourself.



The First Stars and Stripes

The little brick house in which Betsy Ross lived still stands in Philadelphia. Betsy Ross could sew better than anyone else in the city. George Washington stopped at her home. Together they made a plan for a flag which Betsy Ross sewed. This was the first "Stars and Stripes." On June 14, 1777, Congress voted that it should be the nation's flag. Each year June 14 is Flag Day.

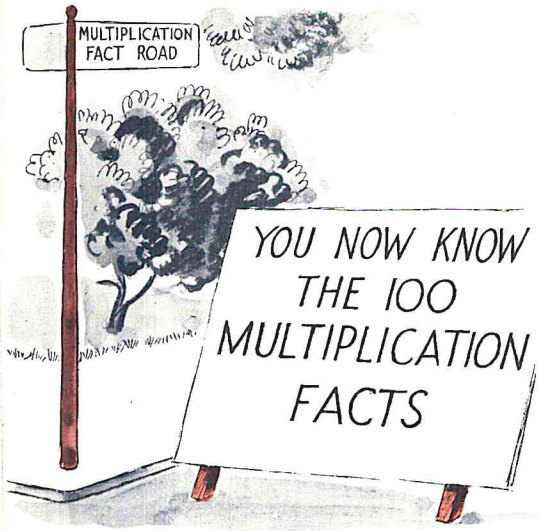
1. There are 8 stars in one row of our flag. How many stars are in 2 rows? In 4 rows? In 6 rows?

2. How many stars are in a flag? What do these stars stand for?

3. How many stripes are in a flag? What do these stripes stand for?

4. If there are 7 red stripes in 1 flag, how many red stripes will it take to make 8 flags? 9 flags?

5. If a stripe is 8 inches wide, how wide will 6 stripes be?



Last of the 100 Multiplication Facts

$8 \times 8 = 64$
$8 \times 9 = 72$
$9 \times 8 = 72$
$9 \times 9 = 81$

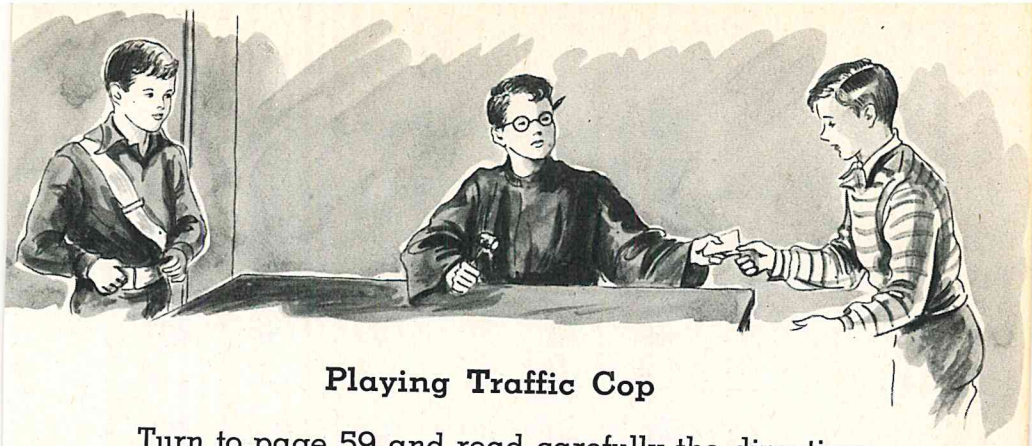
Study these new multiplication facts until you can say them quickly.

Say or write these answers quickly.

1.	6×9	$27 + 2$	$8 \times 7 + 1$	$8 \times 2 + 6$
2.	8×8	$56 + 1$	$9 \times 7 + 6$	$9 \times 6 + 1$
3.	7×9	$63 + 6$	$8 \times 3 + 7$	$8 \times 6 + 2$
4.	9×8	$54 + 2$	$9 \times 1 + 5$	$8 \times 5 + 4$
5.	8×9	$24 + 7$	$8 \times 1 + 5$	$9 \times 5 + 8$
6.	9×7	$27 + 5$	$9 \times 3 + 5$	$8 \times 8 + 3$
7.	7×8	$56 + 4$	$8 \times 7 + 4$	$9 \times 4 + 5$
8.	9×9	$36 + 5$	$8 \times 4 + 7$	$8 \times 8 + 7$
9.	6×8	$63 + 5$	$9 \times 7 + 5$	$9 \times 4 + 6$
10.	9×4	$65 + 8$	$8 \times 0 + 4$	$8 \times 4 + 6$

Write the products on folded paper.

11.	72	56	49	63	714	362	839
	$\times$ 8	$\times$ 8	$\times$ 8	$\times$ 8	$\times$ 8	$\times$ 8	$\times$ 8
12.	37	46	77	51	325	703	760
	$\times$ 9	$\times$ 9	$\times$ 9	$\times$ 9	$\times$ 9	$\times$ 9	$\times$ 9



Playing Traffic Cop

Turn to page 59 and read carefully the directions at the top of the page.

Choose someone to draw a big star on the blackboard and to number it like the one on page 59.

Choose a "traffic cop." He will call for any one of the exercises given below and name someone to go around the star.

Choose a judge. When a pupil on the way around the star misses an answer, he is blocking traffic. The judge gives him a ticket. The ticket is a small piece of paper on which the judge has written the times-and fact that was missed.

Those with tickets should get together later and help each other practice the facts that were missed. Be careful. Keep out of this traffic jam.

An $*$ stands for all the numbers around the big star. Say the answers quickly.

1. $8 \times * + 3$	**5.** $9 \times * + 1$	**9.** $9 \times * + 2$
2. $8 \times * + 5$	**6.** $9 \times * + 6$	**10.** $9 \times * + 4$
3. $8 \times * + 4$	**7.** $8 \times * + 2$	**11.** $9 \times * + 7$
4. $8 \times * + 1$	**8.** $8 \times * + 6$	**12.** $9 \times * + 5$

Multiplication Practice

Write the products on folded paper.

1.	28	17	98	60	476	905	738
	8	8	8	8	9	8	9
2.	80	59	76	32	159	148	246
	9	9	9	9	8	9	8
3.	34	68	96	47	198	564	409
	8	9	8	9	8	9	8
4.	75	80	47	53	501	560	609
	4	5	6	7	8	9	7
5.	84	57	49	63	672	815	756
	7	6	8	4	6	8	9

Put exercises 1–5 above on the blackboard. Check your answers with the correct answers on the blackboard.

Yes or No Game

Say "Yes" if the statement is true; say "No" if it is not true.

6. A pint is smaller than a quart.

7. My father is 12 feet tall.

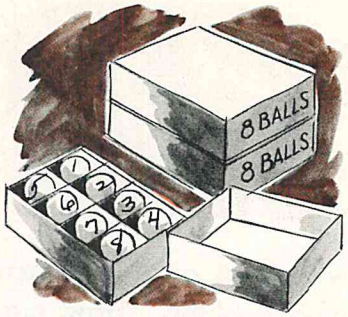
8. A pint of milk will fill two cups.

9. Tom grew 5 feet taller in one year.

10. The long hand of a clock counts minutes.

11. Two quarts make a half gallon.

Remembering the Easier Way to Multiply



1. There are 8 rubber balls in one box. How many are there in 3 boxes?

Do you have to open all the boxes and count to find the answer? Why?

Three 8's are 24.

Eight 3's are 24.

2. If there are 8 rubber balls in a box, how many are there in 7 boxes? In 9 boxes?

3. If there are 8 rubber balls in a box, how many are there in 72 boxes?

It is easier to find eight 72's than to find seventy-two 8's. The product of 72 multiplied by 8 is 576. The meaning of the problem tells you how to name the answer.

$$\begin{array}{r} 72 \\ \times\ 8 \\ \hline 576 \end{array}$$

4. If a large box of lump sugar weighs 8 pounds, how much will 4 large boxes weigh?

How much will 9 large boxes weigh?

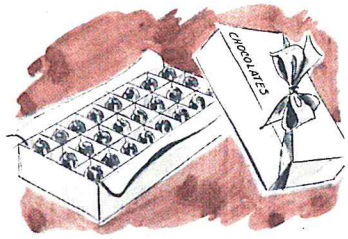
How much will 56 large boxes weigh?

How much will 138 boxes weigh?

5. There will be 428 children in a school play. If it takes 9 yards of crepe paper to make a dress for one child, how many yards will it take to make dresses for all the children?

6. Six pieces of candy are to be given to each child at a school Christmas party. How many pieces of candy will be needed for 969 children?

Multiplying Saves Time in Counting



1. If there are 8 pieces of candy in a row, how many pieces are in 3 rows?

2. Mother bakes cookies on a metal tray. She makes 6 rows of cookies with 8 in a row. Draw a picture of the tray filled with cookies. How many cookies are there on the tray? How did you find the answer?

3. When the cookies are taken from the oven, Mother places them 9 in a row on the kitchen table. How many did she bake if there are 4 rows? 8 rows?

4. There is a tray of chocolates in the window of the candy store. There are 16 chocolates in a row, and 9 rows. Draw a picture of the chocolates. How many are there in all? How did you find the answer?

5. Father planted 9 rows of tulips, with 7 tulips in each row. How many tulips did he plant?

6. Harold went to the post office to buy 60 one-cent stamps. The clerk gave him a sheet of stamps. There were 6 stamps in one row, and there were 10 rows. Did Harold receive the right number of stamps?

7. Helen asked for 35 postage stamps at the post office. The sheet she got had 7 stamps in a row and had 5 rows. Did she get the right number of stamps?

Rumpus

"Please, Father! My dog won't cost you a cent. Aunt Liza will give it to me."

Bert begged and got the dog. Father knew the dog would cost a great deal. He made Bert promise to keep an account of what the dog cost during the year. Help Bert as well as you can.

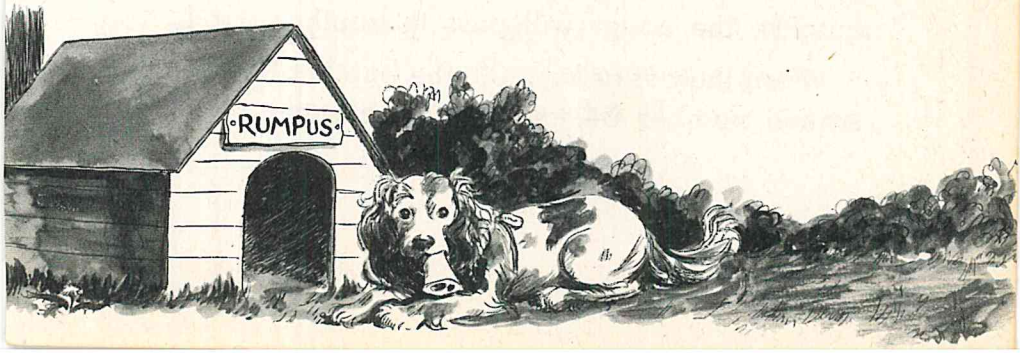
1. The dog house cost \$6.75, the dog tag \$2.00, the harness \$1.45, and the dog soap and flea powder \$0.65. How much was this altogether?

2. Dog food cost 9¢ a can; Rumpus ate a can of food a day. What was the cost of dog food for a week (7 days)? For a month (30 days)? For a year (365 days)?

3. Rumpus also had 8¢ worth of bones a week. What was the cost of the bones for a year (52 weeks)?

Hint: You can multiply by 15 by multiplying by 3 and multiplying that product by 5. Have someone explain this to those who do not understand.

4. During the year, Rumpus was in trouble twice. He lost his dog tag, and the dog catcher got him. Bert had to pay \$2 to get him out of the dog pound. Then Rumpus was sick. The dog doctor charged \$3, and medicines cost \$1.75 more. What was the total?



Dividing By 8

Study these division facts until you can do each one quickly.

$48 \div 8 = 6 \quad 56 \div 8 = 7 \quad 64 \div 8 = 8 \quad 72 \div 8 = 9$

Say or write the quotients.

1. $8\overline{)24} \quad 8\overline{)56} \quad 8\overline{)48} \quad 8\overline{)64} \quad 8\overline{)40} \quad 8\overline{)0}$

2. $8\overline{)72} \quad 8\overline{)32} \quad 8\overline{)16} \quad 7\overline{)56} \quad 6\overline{)48} \quad 8\overline{)8}$

Divide each number in the table below by 8.

8	16	24	32	40	48	56	64	72
9	17	25	33	41	49	57	65	73
10	18	26	34	42	50	58	66	74
11	19	27	35	43	51	59	67	75
12	20	28	36	44	52	60	68	76
13	21	29	37	45	53	61	69	77
14	22	30	38	46	54	62	70	78
15	23	31	39	47	55	63	71	79

Game: Calling All 8's

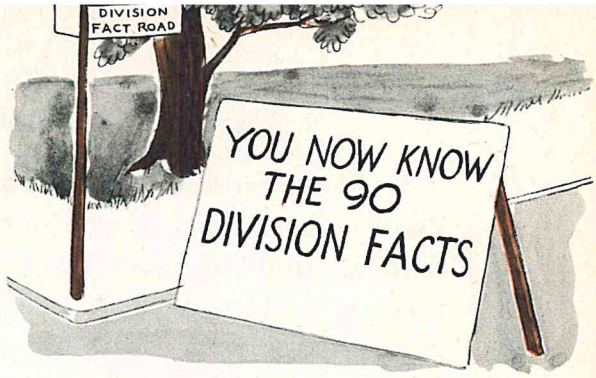
Choose a caller who will look at his book and say any number he chooses from the table above. All others have their books closed.

The pupil he calls will give the station number, the quotient, and the remainder of the number the caller chooses. If the pupil called first does not answer quickly, the caller will pass to another pupil.

When the caller says 68, the pupil called will say: station number 64, quotient 8, remainder 4.

Last of the 90 Division Facts

$54 \div 9 = 6$
$63 \div 9 = 7$
$72 \div 9 = 8$
$81 \div 9 = 9$



Study these new division facts until you can say them quickly.

Say or write the quotients.

1. $9\overline{)0}$ $9\overline{)27}$ $9\overline{)72}$ $9\overline{)63}$ $9\overline{)36}$ $9\overline{)45}$

2. $9\overline{)9}$ $9\overline{)54}$ $9\overline{)18}$ $9\overline{)81}$ $7\overline{)63}$ $8\overline{)72}$

Divide each number in the table below by 9. Say the station number, the quotient, and the remainder.

9	18	27	36	45	54	63	72	81
10	19	28	37	46	55	64	73	82
11	20	29	38	47	56	65	74	83
12	21	30	39	48	57	66	75	84
13	22	31	40	49	58	67	76	85
14	23	32	41	50	59	68	77	86
15	24	33	42	51	60	69	78	87
16	25	34	43	52	61	70	79	88
17	26	35	44	53	62	71	80	89

Play the game of "Calling All 9's."

Say or write the answers.

3. $\frac{1}{8}$ of 32 $\frac{1}{9}$ of 18 $\frac{1}{8}$ of 40 $\frac{1}{7}$ of 21

4. $\frac{1}{9}$ of 45 $\frac{1}{8}$ of 48 $\frac{1}{6}$ of 42 $\frac{1}{7}$ of 42

Plenty of Division Practice

1. Jimmy had 252 packages of flower seeds to divide among the rooms of his school. If there were 9 rooms and if each room got the same number of packages of seeds, how many packages would he give each room?

To divide 25 by 9, think back to 18. Why? There are two 9's in 18. Write the quotient figure **2** above 5, and write 18 below 25. Subtract 18 from 25. Bring down 2 to go with 7 to make 72.

$$\begin{array}{r} 28 \\ 9\overline{)252} \\ 18 \\ \hline 72 \\ 72 \\ \hline \end{array}$$

Check

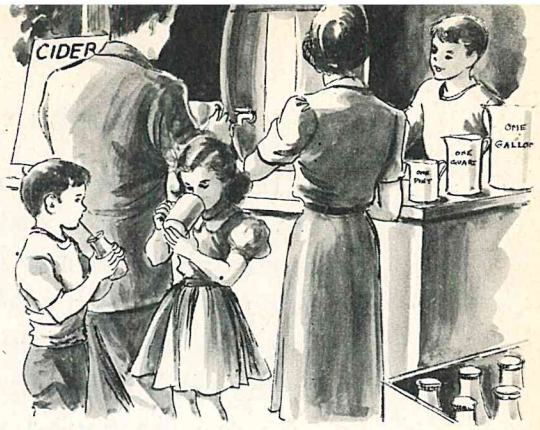
$$\begin{array}{r} 28 \\ \times\ 9 \\ \hline 252 \end{array}$$

There are eight 9's in 72. Write the quotient figure **8** above 2 of 72. The complete quotient is **28**. The name of the answer is packages.

Divide and check.

2.	$7\overline{)504}$	$9\overline{)783}$	$8\overline{)512}$	$6\overline{)570}$	$9\overline{)846}$
3.	$9\overline{)675}$	$8\overline{)664}$	$7\overline{)644}$	$9\overline{)486}$	$6\overline{)354}$
4.	$6\overline{)372}$	$7\overline{)329}$	$9\overline{)387}$	$6\overline{)696}$	$9\overline{)873}$
5.	$8\overline{)520}$	$6\overline{)582}$	$8\overline{)672}$	$9\overline{)576}$	$7\overline{)581}$
6.	$7\overline{)392}$	$8\overline{)576}$	$7\overline{)679}$	$6\overline{)534}$	$6\overline{)594}$

Roadside Drinks



Frank sells milk and cider at a stand at the side of the road. He buys these by the gallon and sells them by the pint. Name something that holds about a pint. Can you drink a gallon of milk at a time? Can you drink a pint of milk at a time? There are 8 pints in a gallon.

1. Yesterday he sold 3 gallons of milk. How many pints was this?

2. Last week he sold 216 pints. How many gallons was this?

3. The milk he sold last week cost him 5¢ a pint. How much did it all cost him?

4. He sold the milk last week for 9¢ a pint. How much did he get for it?

5. How much profit did he make on each pint of milk he sold last week? How much profit did he make on all the milk he sold last week?

6. Last year he sold 1,297 gallons. How many pints was this?

7. There are 31 gallons in a barrel of cider. How many pints is this?

8. See how many pictures you can paste in your notebook showing things being measured by pints, quarts, or gallons.

The 100 Multiplication Facts

The 100 multiplication facts are given on page 72. Choose someone who writes figures neatly and who draws straight lines neatly to copy this table on the blackboard. He will make it big enough so that it can be seen by everyone in the room.

Has the table been copied exactly as in the book? All of it can be copied with white chalk, but from here on you ought to have colored chalk. With the help of everyone, the pupil at the blackboard will do these things.

1. Draw a short blue line under every 0 product. Do you notice how the 0 products are arranged?

2. Draw a short yellow line under each product that is not 0 but is less than 12.

3. Draw a short green line under each product that is 12 or more but less than 21.

4. Draw a short red line under each product that is 21 or more but not more than 49.

5. Draw a short line of any color you have under each of the other products.

With the big table before them, the class will answer these questions.

6. How many 0 products are there?

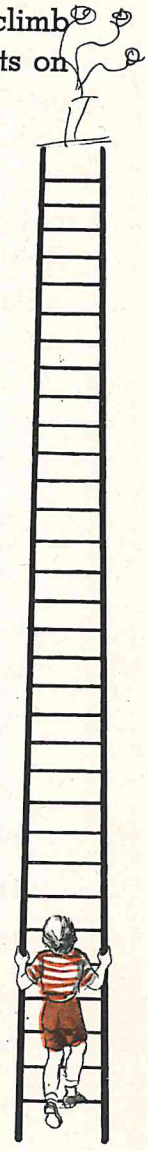
7. How many products are there that are not 0 but are 12 or less than 12?

8. How many products are there in each of the other groups in the table?

Multiplication Ladder

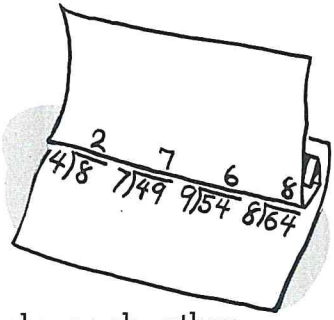
Begin at the bottom of the ladder and try to climb to the top without a mistake. Write the products on folded paper.

8.	56 × 9	74 × 9	29 × 9	38 × 9	582 × 9	673 × 9	895 × 9
7.	76 × 8	58 × 8	94 × 8	67 × 8	574 × 8	853 × 8	935 × 8
6.	93 × 7	84 × 7	75 × 7	66 × 7	159 × 7	308 × 7	570 × 7
5.	79 × 6	64 × 6	93 × 6	85 × 6	958 × 6	477 × 6	686 × 6
4.	63 × 5	87 × 5	94 × 5	38 × 5	762 × 5	693 × 5	879 × 5
3.	36 × 4	65 × 4	82 × 4	74 × 4	768 × 4	857 × 4	939 × 4
2.	54 × 3	79 × 3	92 × 3	45 × 3	738 × 3	966 × 3	587 × 3
1.	31 × 2	37 × 2	42 × 2	49 × 2	265 × 2	176 × 2	898 × 2



ASSUMPTION SCHOOL

Practicing the 90 Division Facts



You may write division answers on folded paper, too. Hold the paper above the row of exercises.

Here are the 90 division facts. Work with a partner. Write or say the quotients. Compare answers and help each other.

1.	$3\overline{)15}$	$6\overline{)24}$	$1\overline{)8}$	$2\overline{)10}$	$4\overline{)24}$	$9\overline{)63}$
2.	$7\overline{)21}$	$6\overline{)0}$	$5\overline{)20}$	$8\overline{)40}$	$5\overline{)45}$	$6\overline{)54}$
3.	$7\overline{)42}$	$7\overline{)35}$	$8\overline{)72}$	$9\overline{)45}$	$7\overline{)56}$	$4\overline{)32}$
4.	$7\overline{)49}$	$8\overline{)32}$	$7\overline{)28}$	$9\overline{)81}$	$6\overline{)48}$	$9\overline{)27}$
5.	$7\overline{)63}$	$5\overline{)35}$	$6\overline{)42}$	$5\overline{)40}$	$9\overline{)72}$	$6\overline{)36}$
6.	$8\overline{)64}$	$6\overline{)30}$	$4\overline{)36}$	$8\overline{)56}$	$9\overline{)36}$	$5\overline{)25}$
7.	$9\overline{)54}$	$4\overline{)28}$	$3\overline{)27}$	$8\overline{)48}$	$5\overline{)30}$	$1\overline{)6}$
8.	$2\overline{)0}$	$6\overline{)18}$	$1\overline{)2}$	$1\overline{)4}$	$3\overline{)9}$	$6\overline{)6}$
9.	$3\overline{)24}$	$9\overline{)9}$	$3\overline{)0}$	$3\overline{)12}$	$2\overline{)18}$	$3\overline{)3}$
10.	$2\overline{)14}$	$4\overline{)4}$	$3\overline{)21}$	$8\overline{)8}$	$8\overline{)0}$	$4\overline{)12}$
11.	$8\overline{)24}$	$5\overline{)15}$	$9\overline{)0}$	$4\overline{)20}$	$1\overline{)9}$	$7\overline{)0}$
12.	$7\overline{)14}$	$2\overline{)4}$	$6\overline{)12}$	$2\overline{)6}$	$1\overline{)3}$	$3\overline{)6}$
13.	$1\overline{)7}$	$5\overline{)5}$	$5\overline{)0}$	$4\overline{)8}$	$2\overline{)8}$	$9\overline{)18}$
14.	$1\overline{)1}$	$4\overline{)16}$	$7\overline{)7}$	$1\overline{)5}$	$2\overline{)16}$	$1\overline{)0}$
15.	$3\overline{)18}$	$2\overline{)2}$	$8\overline{)16}$	$2\overline{)12}$	$5\overline{)10}$	$4\overline{)0}$

A Roadside Stand

Hattie sells fruits, vegetables, and eggs at her stand. Would you like to be a farm girl and make money like this?

1. One day she sold 9 bushels of apples at $1.75 a bushel. How much was this?

2. There are about 89 fancy apples in a bushel. How many fancy apples are there in 8 bushels?

3. A bushel of fancy apples costs her $2.25, and she sells them for $4.25. What is her profit?

4. One day she sold 336 ears of green corn at 2¢ an ear. How much was this?

5. At the rate of 2¢ an ear, how much does she get for a dozen ears?

6. One customer bought 8 dozen eggs at 36 cents a dozen. How much was this?

7. If eggs are 36¢ a dozen, what is the cost of 1 egg?

8. If green corn costs Hattie 15¢ per dozen ears, how much does she make on a dozen ears sold at 2¢ each?

9. If she makes a profit of 9¢ on a dozen ears of corn, how much will she make on 28 dozen ears?

Two-Figure Quotient and Remainder at End

1. Divide 678 by 8. Check.

$$\begin{array}{r} 84 \text{ r } 6 \\ 8\overline{)678} \\ 64 \\ \hline 38 \\ 32 \\ \hline 6 \end{array}$$

Check

$$\begin{array}{r} 84 \\ \times\ 8 \\ \hline 672 \\ +\ 6 \\ \hline 678 \end{array}$$

The quotient is **84**, and there is a remainder of **6** at the end.

To check, multiply 84 by 8 and add 6 to the product. The answer in the "check" equals the given dividend. Thus, the example checks.

Divide and check.

2.	$8\overline{)786}$	$7\overline{)431}$	$6\overline{)596}$	$9\overline{)687}$	$8\overline{)354}$
3.	$7\overline{)576}$	$9\overline{)842}$	$8\overline{)614}$	$9\overline{)731}$	$7\overline{)489}$
4.	$8\overline{)684}$	$9\overline{)762}$	$7\overline{)453}$	$6\overline{)397}$	$9\overline{)856}$
5.	$8\overline{)781}$	$6\overline{)309}$	$7\overline{)417}$	$9\overline{)532}$	$9\overline{)607}$
6.	$6\overline{)519}$	$8\overline{)633}$	$9\overline{)838}$	$6\overline{)462}$	$7\overline{)315}$
7.	$8\overline{)739}$	$6\overline{)347}$	$9\overline{)638}$	$8\overline{)547}$	$8\overline{)639}$
8.	$9\overline{)873}$	$9\overline{)738}$	$7\overline{)641}$	$6\overline{)550}$	$8\overline{)705}$
9.	$7\overline{)245}$	$7\overline{)618}$	$8\overline{)737}$	$9\overline{)840}$	$9\overline{)681}$

Arithmetic in the Garden

1. Mr. Rush raises vegetables to sell. He ties 9 carrots in a bunch. If he has pulled 756 carrots, how many bunches can he make and how many will be left over?

2. He wishes to tie 714 beets into bunches of 8. How many bunches will there be and how many will be left over?

3. He ties 6 large onions in a bunch. How many bunches can he make from 455 large onions? How many will be left over?

4. He sells his choice tomatoes on paper plates, with 7 on a plate. Tell how he would arrange them to get 7 tomatoes on a round plate. Mr. Rush picked 482 choice tomatoes in one day. How many plates could he arrange, and how many would be left over?

5. He puts 6 large bunches of grapes in a bag. How many bags can he fill, and how many bunches will be left over if he has 514 large bunches?

6. There are about 500 grains of sweet corn in a pound. If he plants 4 grains in a hill, how many hills can he plant with a pound of corn?

7. There are about 200 pole beans in a pound. If he plants 5 beans in a hill, how many hills can he plant with a pound of pole beans?

Division Practice

1. George and Nancy are putting candy in bags for a church fair. They put 9 pieces in a bag. How many bags can they fill with 756 pieces?

Divide 756 by 9 just as you divided on page 118. What is the quotient? What is the remainder?

84
9)756
72
36
36
0

2. They put 6 cookies in a bag. How many bags will they need if they have 720 cookies?

3. Copy and divide.

7)854 9)576 6)912 8)700 5)895 4)876

4. Tom and Jane have 503 sticks of candy to put into bundles. If they put 8 sticks to the bundle, how many bundles will they have? How many sticks will be left over?

Divide 503 by 8 just as you divided on page 118. What is the quotient? What is the remainder?

62 bundles
8)503
48
23
16
7 sticks

5. Ann put 893 pieces of candy into small boxes. If there were 9 pieces in each box, how many boxes did she fill? How many pieces of candy were left over?

6. Divide each number in Row A by each number in Row B.

Row A	793	482	409	905	870	309	558	934
Row B	5	8	3	4	2	7	6	9

Longer Quotients

Well! Well! The quotients now have three figures, or even more, but it is still easy to divide and to find quotients.

1. Divide 8,631 by 9. Check.

To check, you multiply 959 by 9. Do this. Does the example check?

$$\begin{array}{r} 959 \\ 9\overline{)8631} \\ 81 \\ \hline 53 \\ 45 \\ \hline 81 \\ 81 \\ \hline \end{array}$$

Divide and check.

2. $4\overline{)1356}$ $6\overline{)2532}$ $8\overline{)3816}$ $7\overline{)4144}$ $9\overline{)5382}$

3. $6\overline{)7893}$ $9\overline{)1279}$ $3\overline{)2595}$ $8\overline{)5985}$ $7\overline{)6171}$

4. $6\overline{)9342}$ $8\overline{)19784}$ $7\overline{)31794}$ $9\overline{)20844}$ $5\overline{)8765}$

5. $2\overline{)8456}$ $7\overline{)39598}$ $9\overline{)67735}$ $8\overline{)78681}$ $6\overline{)19935}$

6. A bank account of $28,428 is to be divided equally among 3 persons. How much will each receive?

7. A steamship made a trip of 3915 miles in 5 days. How many miles was this a day if it went the same distance each day?

8. Last week the Busy Bee restaurant served 9709 meals. How many was this a day if the same number were served each day?

9. It took Mr. Brown five days to make a trip of 2650 miles. How many miles did he drive each day?

Picnic Day Is Here

1. There were 6 bus loads of children. If 46 children rode in each bus, how many children were in all the buses?

2. One hundred thirty-two rode to the picnic in automobiles, with six children to each automobile. How many automobiles were there?

3. They made lemonade in 24-gallon jars. How many gallons of lemonade could they put in 6 jars? In 9 jars? In 7 jars?

4. They had 54 big watermelons and cut each into 8 pieces. How many pieces did they have?

5. They sold 366 pieces of cake at the cake booth. How many cakes did they sell if each cake had been cut into 6 pieces?

6. There were two dozen cookies in each box. How many cookies were in 9 boxes?

7. There were 500 cones for ice cream. After selling 289 ice-cream cones, how many were left?

8. Lunches cost 25 cents each. Jack bought lunch for himself and three other boys. How much did he have to pay?

9. There are 80 paper napkins in a package. How many are in 7 packages?

10. Three hundred forty-eight children were in contests. One-fourth of them won prizes. How many won prizes?

11. The girls ran a race in 8 minutes, and the boys ran it in one-half the time. How long did it take the boys?

12. One hundred twenty-six children were in the sack race. One-ninth of them won prizes. How many won prizes?

13. In the "three-legged" race, two children were tied together to make one racer. One hundred twenty children were in the race. How many racers were there?

14. Jerry won a tennis racket worth $3.75. Mary won a ball worth $4.95. Billy won a baseball suit worth $9.95. How much were the three prizes worth?

15. Tommy's boat won the boat race. He received a 10-dollar bill as prize. If it cost him $5.75 to make his boat, how much money was he ahead?

A Page of Adding and Subtracting

Write the sums on folded paper. Check by adding each column in the opposite direction. Be careful to carry correctly.

1.

7	8	76	92	328	75	$1.25
6	4	35	7	605	416	.65
5	0	10	65	917	80	5.10
4	5	27	28	429	7	.08
3	2	44	4	280	229	7.20

Subtract. Write the answers on folded paper.

2.

45	39	75	34	186	126	156
42	35	72	27	184	112	132

When you divide 3027 by 8 and show all your work, you will see the subtractions at the right. Do this.

30	62	67
24	56	64
6	6	3

Show the subtractions that have to be done in each of these divisions.

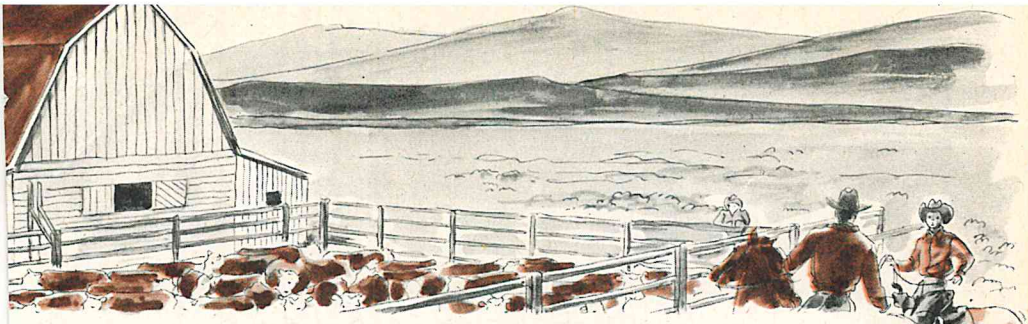
3. $6\overline{)3227}$ $7\overline{)3027}$ $9\overline{)3027}$ $8\overline{)6315}$ $9\overline{)6142}$

4. $6\overline{)4738}$ $7\overline{)4738}$ $8\overline{)4738}$ $9\overline{)4738}$ $8\overline{)3515}$

Subtract. Write the answers on folded paper.

5.

7,419	6,535	8,656	9,573	5,450
3,205	4,218	5,382	3,650	2,283



First Round-Up for Unit 5

Write the station numbers.

1. By 6's from 0 to 54

2. By 7's from 0 to 63

3. By 8's from 0 to 72

4. By 9's from 0 to 81

Write the answers.

5. $8\times8+5$ $8\times4+6$ $9\times9+4$ $9\times1+8$

6. $9\times6+3$ $9\times4+8$ $8\times7+4$ $8\times2+6$

7. $8\times5+3$ $8\times3+4$ $9\times8+5$ $9\times3+7$

Write the products on folded paper.

8.

487	195	354	276	387	764
× 8	× 9	× 8	× 8	× 9	× 9

Write answers only.

9. $\frac{1}{6}$ of a dozen eggs $\frac{1}{3}$ of a dozen pencils

10. $\frac{1}{7}$ of \$63 $\frac{1}{8}$ of 48 apples

11. $\frac{1}{9}$ of 36 pupils $\frac{1}{4}$ of 28 cookies

Divide.

12. $6\overline{)138}$ $6\overline{)457}$ $6\overline{)552}$ $6\overline{)294}$ $6\overline{)382}$

13. $7\overline{)235}$ $7\overline{)384}$ $7\overline{)468}$ $7\overline{)615}$ $7\overline{)541}$

14. $8\overline{)516}$ $8\overline{)332}$ $8\overline{)634}$ $8\overline{)750}$ $8\overline{)497}$

Catching Those That Got Away

(For those who missed more than four in the First Round-Up.)

1. One station number for 7 is 28. How can you find the next larger station number?

Answer: You can add 7 to 28.

2. One station number for 8 is 48. Is the next larger station number 54? Prove your answer.

3. If you have trouble with your station numbers, do exercises 1 to 4, page 125 again.

4. Divide by 6. Say the station numbers.

13 19 45 37 55 29 38 52

5. Divide by 7. Say the station numbers.

23 25 38 34 46 50 61 55

6. Divide by 8. Say the station numbers.

51 36 33 12 63 74 49 17

7. Divide by 9. Say the station numbers.

84 29 43 66 34 70 74 39

8. Tell exactly what you do when you take $\frac{1}{6}$ of a number. Take $\frac{1}{6}$ of 42.

9. Tell exactly what you do when you take $\frac{1}{8}$ of a number. Take $\frac{1}{8}$ of 56.

10. If you have trouble with multiplication on page 125, practice on pages 106 and 115.

Roping the Tough Ones

(For those who did not miss more than four in the First Round-Up.)

1. There are 36 sheets in a package of tracing paper. How many sheets are there in 9 packages?

2. Mother cut a cake into 16 pieces. The family ate $\frac{1}{4}$ of the cake at one time. How many pieces did they eat? How many pieces were left?

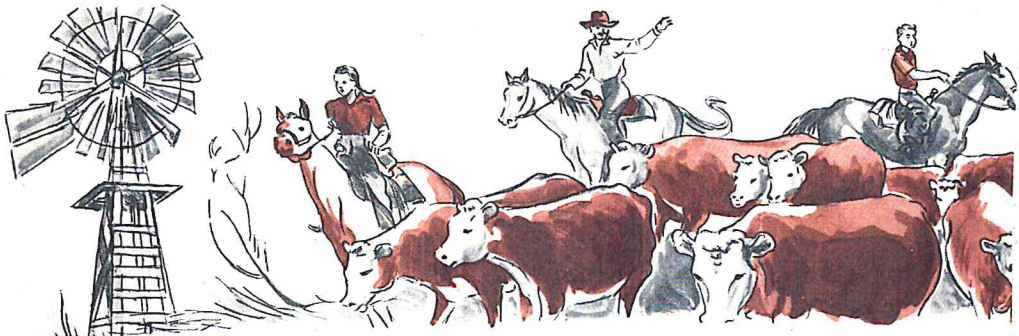
3. I have read 84 pages in my new book. Mother says I have read $\frac{1}{3}$ of it. How many pages are there in the book?

4. At 60¢ a pound, how much will $\frac{1}{2}$ pound of sliced ham cost?

5. My sweater cost $1.98, my gloves $0.89, and my shoes $2.65. How much did all three cost?

6. Our home cost seven thousand five hundred forty dollars, our car cost nine hundred seventy-five dollars, and our new garage cost three hundred fifty dollars. How much did all three cost?

7. There were 1,483 persons on the main floor and 649 persons in the balcony at a show. How many more persons were on the main floor than in the balcony?



Last Round-Up for Unit 5

Write the products.

1.

675	869	493	582	948	327
× 6	× 7	× 4	× 8	× 9	× 3

Divide and check.

2. $6\overline{)2049}$ $7\overline{)2467}$ $8\overline{)2594}$ $9\overline{)7598}$

Before starting to work a problem, think: "Must I add, subtract, multiply, or divide to get the right answer?"

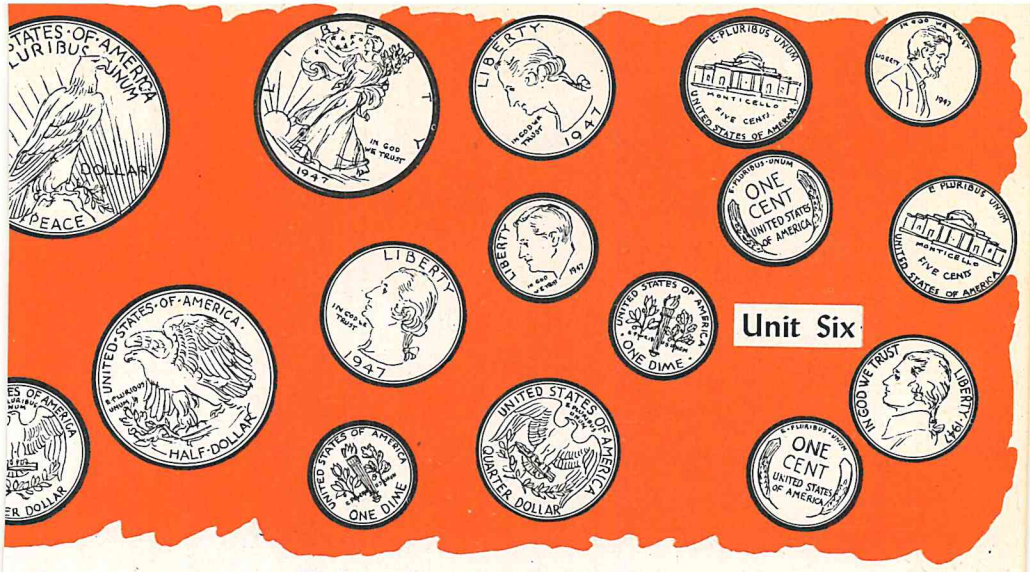
3. Jack gave me 18 sheets of paper, which was $\frac{1}{3}$ of all he had. How many sheets did he have?

4. Helen had 72 picture cards and gave $\frac{1}{3}$ of them to Alice. How many did she give to Alice?

5. I have $3,798 to divide equally among 9 persons. How much will each receive?

6. An excursion boat sold 1,488 tickets on Monday. One-sixth of the tickets were for children. How many children's tickets were sold?

7. A radio announcer said that he received four thousand six hundred ninety-eight letters on Friday and nine thousand four hundred sixty-two on Saturday. Write these two numbers in figures.



A Study of Our Coins

1. Show three coins or groups of coins on this page that are worth exactly $1.

2. Why is a half dollar named as it is? Does it have another name?

3. Why is a quarter named as it is? Does it have another name?

4. How many dimes are there in $1? In a half dollar?

5. How many nickels are there in a quarter? In a half dollar? In a dollar?

6. You can write a dime in three ways: ten cents, 10¢, and $0.10. Write each of these in three ways: a dollar; a half dollar; a quarter; a nickel.

7. If you had a quarter, a nickel, and a dime, how much money would you have?

A Matching Game

For each amount named in Column 1, say the letter before an equal amount in Column II.

Column I	Column II
1. $0.05	a. 10¢
2. Two half dollars	b. A half dollar
3. 50 cents	c. $4.01
4. Two quarters and a dime	d. $0.18
5. Twenty-five cents	e. 5¢
6. $1.25	f. $0.03
7. Three cents	g. $1
8. One dime	h. $0.60
9. 18¢	i. One quarter
10. Four dollars and one cent	j. 5 quarters

Three answers are given for each question below. Choose the best answer.

11. With which can you buy more?

a. a quarter b. a dime c. four nickels

12. Ruth spent three dimes and a half dollar, which was the same as:

a. 70¢ b. 75¢ c. 80¢

13. Mr. Jones built an 8-room brick house. It cost:

a. $7,000 b. $70 c. $700

14. I have twenty dollars and two cents, which is:

a. $2.02 b. $20.20 c. $20.02

15. I owe $12.95. When I go to pay it I should take:

a. two $5 bills b. a $10 bill c. three $5 bills

Thinking What to Do First

Word problems never made much sense to Lois. She read them, picked out the numbers, and then did just anything with these numbers. She covered her paper with figures, but she did not find answers that made sense. Lois simply did not plan before she started to work.

She should think, "There are just four things you can do to solve a simple problem. Which must I use?"

Add **Subtract** **Multiply** **Divide**

Read these problems carefully. Tell Lois what she should do to find the right answers.

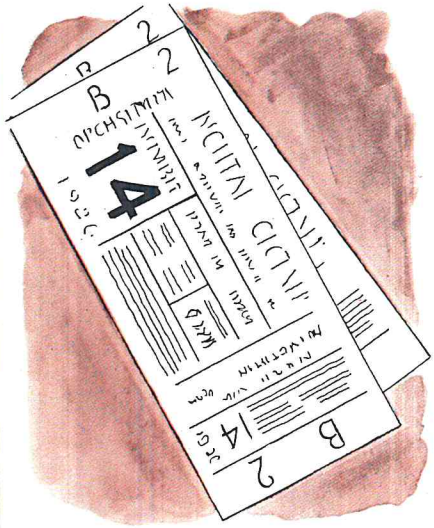
1. I had some picture cards and some children gave me more. How many cards do I have now?

2. I had some money and spent part of it for candy. How much did I have left?

3. I have a box of apples and want to give all of them to the children in my room. How many will each child get?

4. I travel the same distance each day. How far do I travel in a week?

5. I bought some bread, some meat, and some milk. How much did I spend?



Earning Money for Your School

1. The school children sold 448 children's tickets and 359 grown-up tickets. How many of both kinds of tickets did they sell?

2. How many more children's tickets than grown-up tickets did they sell?

3. The expenses in giving the play were $49.25, and they took in $165.85 from the sale of tickets. How much above expenses did they make?

4. Thirteen hundred forty-six grown-ups and children paid one cent each to see things in the penny show. How much was this? Does the answer seem reasonable?

5. The ice-cream stand sold 942 ice-cream cones at 5¢ each. How much did they get for these? Does the answer seem reasonable?

6. If the ice cream and the cones cost $22.40 and were sold for $47.10, how much did the school make?

7. Some women and older girls brought pies and cakes to be sold to the highest bidder. There were five apple pies. They sold for $0.37, $1.25, $0.10, $0.75, and $2.85. How much did all of them bring?

8. All the pies sold brought $8.73, and all the cakes brought $11.42. How much did the pies and cakes together bring?

Spending the Profits

1. The school used part of the money earned at the play and penny show to buy books. Nine books for boys were bought at $1.67 each, and 7 for girls were bought at $1.89. How much did the books for boys cost? How much did the books for girls cost? How much did they cost together?

2. Find the cost of 6 school dictionaries at $3.48 each. A big dictionary would cost $22.98. How much more does the big dictionary cost than the 6 school dictionaries?

3. There were 8 rooms of older children who studied geography. The school bought a fine globe for each of these rooms. If one globe cost $9.98, what did the school pay for all of the globes?

4. Story books for smaller children cost 67 cents each. How much would 6 such books cost?

5. The school bought two bats and three soft balls for the larger boys. What was the cost of the bats at $1.55 each? Of the soft balls at 89 cents each?

6. The school bought a bow and arrow outfit for the older girls. The bow cost $3.69, and the arrows cost $0.27 each. Find the cost of 8 arrows. Find the cost of the bow and the 8 arrows.

7. One kind of nature books costs $48.20 a set and another kind costs $55.25 a set. How much more a set does the second kind cost? How much would the school need to pay for one set of each kind?

Stop! Look! And Remember!

1. Divide 420 roses into 7 equal bunches.

There are six 7's in 42. Write the quotient figure **6** above 2 of 42.

When 42 is subtracted from 42, there is remainder 0, and you bring down 0. There are no 7's in 0. Write the quotient figure **0** above 0 of 420.

The complete quotient is 60.

$$\begin{array}{r} 60 \text{ roses} \\ 7\overline{)420} \text{ roses} \\ 42 \\ \hline 00 \\ 00 \\ \hline \end{array}$$

I must show a quotient figure for every dividend figure I use.

2. Divide 635 marbles equally among 9 boys. How many will each receive and how many are left over?

There are seven 9's in 63. Write the quotient figure 7 above 3 of 63.

When 63 is subtracted from 63, the remainder is 0. Bring down 5. There are no 7's in 5. Write the quotient figure **0** above 5 of 635.

$$\begin{array}{r} 70 \text{ marbles} \\ 9\overline{)635} \text{ marbles} \\ 63 \\ \hline 5 \\ 0 \\ \hline 5 \end{array}$$

The quotient is 70, and the remainder is 5.

Divide and check. Remember the **0** at the end of the quotient. Find the quotient and the remainder.

3.	$6\overline{)540}$	$9\overline{)270}$	$7\overline{)560}$	$8\overline{)240}$	$7\overline{)630}$
4.	$9\overline{)726}$	$8\overline{)482}$	$6\overline{)485}$	$7\overline{)424}$	$5\overline{)352}$
5.	$4\overline{)1683}$	$7\overline{)2240}$	$8\overline{)3446}$	$9\overline{)8555}$	$6\overline{)5645}$

Watch for Zero Within the Quotient

1. Divide 2456 by 8. Check.

There are three 8's in 24. Write **3** above 4.

There are no 8's with 5 over in 5. Write the **0** above 5.

There are seven 8's in 56. Write 7 above 6.

The complete quotient is **307**. It checks.

$$\begin{array}{r} 307 \\ 8\overline{)2456} \\ 24 \\ \hline 5 \\ 0 \\ \hline 56 \\ 56 \\ \hline \end{array} \qquad \begin{array}{r} 307 \\ \times 8 \\ \hline 2456 \end{array}$$

2. Divide 5439 by 9. Check.

There are six 9's in 54. Write **6** above 4.

There are no 9's with 3 over in 3. Write **0** above 3.

There are four 9's and 3 over in 39. Write **4** above 9.

The quotient is **604** and the remainder is **3**. The answer checks.

$$\begin{array}{r} 604 \text{ r } 3 \\ 9\overline{)5439} \\ 54 \\ \hline 3 \\ 0 \\ \hline 39 \\ 36 \\ \hline 3 \end{array} \qquad \begin{array}{r} 604 \\ \times 9 \\ \hline 5436 \\ 3 \\ \hline 5439 \end{array}$$

Divide and check. Remember the 0 within the quotient.

3.	$6\overline{)3018}$	$7\overline{)2842}$	$9\overline{)6345}$	$8\overline{)7248}$
4.	$7\overline{)4249}$	$8\overline{)3272}$	$9\overline{)7218}$	$8\overline{)4056}$
5.	$5\overline{)2542}$	$8\overline{)4835}$	$6\overline{)5420}$	$8\overline{)1645}$
6.	$8\overline{)7264}$	$6\overline{)3642}$	$9\overline{)8195}$	$7\overline{)4343}$

Multiplying by 10

We are getting ready to multiply with two-figure multipliers. Learning how to multiply by 10 will help us.

1. Count by 10's to 100. Begin 0, 10, 20, . . .

2. Make a table of the 10-facts in multiplication. Begin $1 \times 10 = 10$, $2 \times 10 = 20$, . . .

3. If a loaf of bread costs 10¢, what is the cost of 4 loaves of bread? Of 6 loaves? Of 9 loaves?

4. If each piece of ribbon is 10 inches long, what is the length of 3 pieces? Of 5 pieces? Of 7 pieces?

5. If each boy has 10 marbles, how many marbles do 2 boys have? 8 boys? 10 boys?

6. If each girl has 10 pieces of candy, how many pieces of candy do 6 girls have? 9 girls? 7 girls?

7. How many pennies in a dime? In 3 dimes? In 5 dimes?

8. Tom bought a pound of candy and gave the clerk 6 dimes. How much did the candy cost?

9. Billy has a dime bank. If he has 9 dimes in it, how much money does he have in his bank?

10. Ann planted 8 rows of cabbage plants with 10 plants to a row. How many cabbage plants were there?

Say or write these products quickly.

11.	3×10	10×7	9×10	10×4	6×10
12.	10×2	5×10	10×9	8×10	10×6

A Good Short Cut Saves Time

After you have studied this page, you can multiply any number by 10 without using a pencil.

1. Study these products; then make up a rule that gives an easy way to multiply a number by 10.

$10 \times 13 = 130 \quad 10 \times 64 = 640 \quad 10 \times 80 = 800$

2. Use the rule you made up to multiply each of these numbers by 10.

36 45 60 18 10 235 210 300

To multiply a number by 10, annex a 0. To annex a 0 to a number means to write a 0 after the number.

Study these multiplications. Then copy and write the products.

3.

19	28	67	80	354	670	400
10	10	10	10	10	10	10
190	280	670	800	3540	6700	4000

Say or write these products quickly.

4.

76	43	81	50	320	401	600
10	10	10	10	10	10	10

5.

90	56	73	10	403	340	700
10	10	10	10	10	10	10

6. There are 10 rows in a sheet of postage stamps with 10 stamps in a row. How many stamps are there in a sheet?

7. Find the cost of 10 tables at $3 each.

Multiplying by Other Numbers Ending in 0

Study these multiplications. Copy without the products and write the products without looking at the book.

1.

23	41	68	70	423	530	600
20	20	20	20	20	20	20
460	820	1360	1400	8460	10600	12000

2. Make up a rule that gives you an easy way to multiply by 20.

3. Use the rule you made up to multiply each of these numbers by 20.

16 43 37 50 324 410 700

To multiply a number by 20, multiply by 2 and annex a 0.

4. Make up a rule that gives you an easy way to multiply a number by 30.

5. Use the rule you made up to write these products on folded paper.

21	42	34	60	570	321	400
30	30	30	30	30	30	30

6. Make up a rule that gives you an easy way to multiply by 40; by 50; by 60; by 70; by 80; by 90.

7. Write these products on folded paper.

24	31	64	72	214	365	441
20	30	40	50	60	70	80

Two-Figure Multipliers

1. There are 36 paper napkins in a package. Lucy brought 3 packages, and Ruth brought 10 packages. How many napkins did each bring? How many napkins did both bring?

36 × 3 = 108 Lucy

36 × 10 = 360 Ruth

108 Lucy + 360 Ruth = 468 Both

2. There are 24 paper plates in a package. Alice brought 2 packages and Sue brought 30 packages. Together they brought 32 packages. How many paper plates did both bring?

24 × 2 = 48 Alice

24 × 30 = 720 Sue

48 Alice + 720 Sue = 768 Both

There is a better way to find how many paper plates both brought.

Multiply 24 by 2 and write the product **48** as shown.

Multiply 24 by 30 and write the product **720** as shown.

The sum of 48 and 720 is 768.

Thus, the product of 32 × 24 is **768**.

Better Way

$$\begin{array}{r} 24 \\ \times\ 32 \\ \hline 48 \\ 720 \\ \hline 768 \end{array}$$

Multiplication Problems and Practice

1. Mr. West bought 28 pieces of lumber. Each piece was 42 inches long. What was the total length?

2. If Mr. West nailed 54 shingles in a row, how many did he nail in 36 rows?

3. He bought 12 bags of cement each weighing 94 pounds. How many pounds of cement did he buy?

Copy and multiply.

4.	63	47	52	89	63	17	75	29
	21	43	26	31	18	42	47	32
5.	81	43	69	75	38	58	46	83
	22	61	54	48	31	14	11	53

Here is a way to multiply that is a little shorter than the way you know now.

6. Multiply 72 by 34.

Multiply 72 by 4 and write the product **288** as shown.

Multiply 72 by 30 and write the product **2160** as shown under "One Way."

One Way	Shorter Way	
72	72	
34	34	Leave space empty.
288	288	
216	216	← Think 0.
2448	2448	

Under the "Shorter Way," you multiply 72 by 3 and write the product **216** as shown. The 6 of 216 is under the 3 of 34. The answer is **2,448.**

7. Multiply exercises 4 and 5 again, using the "Shorter Way."

Using the Shorter Way to Multiply

1. Multiply 62 by 43.

Think $3 \times 2 = 6$, and write **6** under 3. Think $3 \times 6 = 18$, and write **18** as shown.

Think $4 \times 2 = 8$, and write the **8** under the 4. Think $4 \times 6 = 24$, and write the **24** as shown.

62 multiplicand
43 multiplier
186
248 ← Think 0. Leave space empty.
2666 product

Add 186 and 248 as they are written. Their sum is **2,666.**

2. Multiply 73 by 42.

Copy this example on the blackboard. Find the product without looking at the book. Let someone tell what he thinks and what he writes for each step.

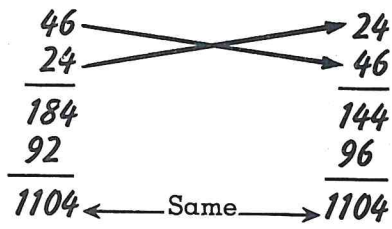
73 multiplicand
42 multiplier
146
292
3066

Copy and multiply. Use the shorter way. Check by going over your work a second time.

3.	21	43	21	32	15	44
	32	23	14	12	21	22
4.	28	33	48	69	46	91
	12	21	32	13	31	52
5.	72	65	28	93	64	37
	33	24	74	28	41	26

Checking Multiplication

The examples at the right show a new way to check multiplication.



To check multiplication change the places of the two numbers you have multiplied, and multiply again. If your work is correct, you will get the same answer for both multiplications.

Copy and multiply. Check by changing the places of the two numbers to be multiplied, and multiply again.

1.	72 27	71 17	53 44	62 47	96 24	54 32
2.	53 26	25 53	27 11	43 17	16 45	34 35
3.	81 13	54 39	36 57	72 22	45 48	63 31
4.	34 27	49 25	73 28	37 53	81 52	65 43
5.	65 42	73 91	74 87	67 56	83 95	79 44
6.	78 86	92 59	18 65	21 77	81 56	47 89

Problems About Corn

1. If there are 68 rows of corn in a field with 70 hills to a row, how many hills of corn are there? The two or three stalks of corn that grow close together are called a hill of corn.

2. If there are 2 stalks of corn in each hill, how many stalks are there in the whole field? If each stalk has one good ear on it, how many good ears are there in the field?

3. The cobs from a bushel of corn weigh 14 pounds. How many cobs will there be in 95 bushels of corn?

4. A bushel of corn on the cob weighs 70 pounds. Find the weight of 95 bushels of corn on the cob.

5. A bushel of shelled corn weighs 56 pounds. Find the weight of 95 bushels of shelled corn.

6. At $1.25 a bushel, how much would 95 bushels of shelled corn bring?

7. The farmer feeds one pig 12 ears of corn a day. How many ears will he need for 35 pigs in one day?

8. The farmer's wife shells 30 ears of corn for the chickens each day. How many ears will she shell for the chickens in 28 days?

Here Is Work You Will Enjoy

Divide the class into two teams, the Reds and the Blues. The boys will be Reds and the girls will be Blues.

Work as fast as you can. Correct your papers at the end of each section. Which team won most often?

Add. Check by adding in the opposite direction.

1.

	67	735	48	871		382
70	8	37	301	82	6,754	5,438
45	35	18	54	543	7,320	59
9	99	562	700	56	8,642	3,040
38	7	6	38	15	9,106	115

Subtract. Check by adding.

2.

427	953	735	637	917	730	507
252	428	388	542	84	671	49

Multiply. Check.

3.

25	92	72	53	27	34
37	46	28	19	78	36

Divide. Check by multiplying.

4. $9\overline{)3600}$ $8\overline{)1376}$ $7\overline{)1834}$ $6\overline{)960}$ $7\overline{)714}$

5. There are 5,280 feet in a mile and 3 feet in a yard. How many yards are there in a mile? Divide 5,280 by 3.

6. Divide $9,720 into 9 equal parts.

Our Multiplication Grows

1. Mr. Lyon has 38 rows of tobacco with 244 plants to a row. How many plants are there in all?

Multiply 244 by 8 and write the product **1952** with the 2 under the 8 of 38.

Multiply 244 by 3 and write the product **732** with the 2 under the 3 of 38.

Add 1952 and 732 as they are written. The answer is **9,272.**

$$\begin{array}{r} 244 \\ \times\ 38 \\ \hline 1952 \\ 732 \\ \hline 9272 \end{array}$$

Check by covering the work and multiplying again.

Multiply and check.

2.	327	126	283	684	793	375
	41	53	84	31	56	76
3.	739	972	433	872	464	782
	93	26	39	25	54	32

4. The automobile distance from Chicago to San Francisco is 2,235 miles. Mr. Adams has made the trip 42 times. How many miles is this?

Multiply 2235 by 2 and write the product **4470** as shown.

Multiply 2235 by 4 and write the product **8940** as shown. The answer is **93,870** miles.

$$\begin{array}{r} 2235 \\ \times\ 42 \\ \hline 4470 \\ 8940 \\ \hline 93870 \end{array}$$

5. It is 542 miles from Memphis to Chicago. A truck made the trip 32 times. How many miles was this?

6. A barrel of flour weighs 196 pounds. What is the weight of 48 barrels of flour?

7. A certain block of marble weighs 625 pounds. What is the weight of 36 such blocks of marble?

Multiplying Dollars and Cents

1. Mr. Newman sold 38 scooters at $1.29 each. How much did he get for all of them?

Write 38 under $1.29 and multiply.

Write the cents point in the answer exactly under the cents point in $1.29.

The answer is **$49.02.**

$1.29
38
1032
387
$49.02

2. Find the cost of 84 excursion tickets at 65 ¢ each.

Write 65 ¢ as $0.65. Write 84 under $0.65 and multiply.

The answer is **$54.60.**

To check, cover the work and multiply a second time.

$0.65
84
260
520
$54.60

Multiply and check.

3.	$0.27 42	$2.45 76	$6.78 91	$1.48 16	$3.95 37
4.	$3.24 28	$0.64 32	$5.94 29	$5.76 63	$2.84 73
5.	$7.58 43	$6.19 37	$7.34 12	$0.54 69	$5.63 67
6.	$0.63 45	$2.63 98	$2.29 48	$0.19 76	$1.47 67
7.	$1.29 47	$3.98 32	$7.45 68	$9.16 75	$8.49 67

Susan

I am Susan. Here are some of my expenses for last year.

1. I had a music lesson each week for 48 weeks. Each lesson cost $1.50. What was the cost of all the lessons?

2. These are my other expenses for music: music book, $0.35; stringing the bow, $1.25; violin strings, $1.85; repairs, $1. How much was this?

3. I had one ride on an excursion boat. The ticket cost 65 cents, and I spent $2.80 for things on the boat. I also went on a picnic and spent $4.25. How much was this?

4. I went to the picture show 16 times. Each time it cost me 37¢. How much did they all cost?

5. My Christmas presents cost $7.95, and my Easter presents cost $2.15. On my birthday, I got roller skates that cost $2.90 and a book that cost $1.05. On Donnie's birthday I got a scooter that cost $3.89. You see, Donnie is my brother and gets presents on my birthday, and I get presents on his birthday. How much did these presents cost?

I know my expenses were a great deal more than this. I ate three meals a day, had a home to live in, and wore clothes like other children. These things cost much money.

Grandma Checks Up on Earl

My! My! How that boy does grow! Yes, Grandma, and what he knows about arithmetic grows, too. Only ten weeks ago he could not do a single problem on these two pages. Now he can do all of them. Can you, too?

1. How many inches are there in 8 feet? In $\frac{1}{2}$ foot? In $\frac{1}{3}$ foot?

2. How many pints are there in 3 gallons? In $\frac{1}{2}$ gallon? In $\frac{1}{4}$ gallon?

Say or write the answers.

3. $\frac{1}{5}$ of 30 $\frac{1}{6}$ of 24 $\frac{1}{7}$ of 42 $\frac{1}{8}$ of 56

4. $\frac{1}{9}$ of 45 $\frac{1}{8}$ of 32 $\frac{1}{7}$ of 63 $\frac{1}{6}$ of 48

Multiply.

5.

78	69	85	90	370	609	884
7	8	9	6	8	9	7

6.

36	57	80	91	374	962	873
24	30	43	52	28	45	68

7. Find the cost of 76 chairs at $8 each.

8. If a table costs $9.65, what will 24 tables cost?

Say the station number and quotient.

9. $17 \div 6$ $54 \div 7$ $56 \div 8$ $35 \div 6$ $44 \div 9$

10. $69 \div 8$ $60 \div 9$ $57 \div 7$ $54 \div 9$ $42 \div 8$

11. $8\overline{)632}$ $6\overline{)372}$ $9\overline{)477}$ $7\overline{)644}$ $8\overline{)448}$

Divide. Watch 0 in the quotient.

12. $7\overline{)560}$ $8\overline{)320}$ $9\overline{)630}$ $7\overline{)493}$ $6\overline{)485}$

13. $7\overline{)2149}$ $9\overline{)7250}$ $8\overline{)4872}$ $6\overline{)3124}$ $9\overline{)5943}$

14. Give a good rule to use in multiplying a number by 30.

15. Peddler Joe had neckties at 49¢ each and suspenders at 59¢ a pair. What is the cost of 3 neckties? Of 3 pairs of suspenders? Of 3 neckties and 3 pairs of suspenders together?

16. Mr. Rush has 755 small stalks of celery that he wishes to tie into bunches of 7 stalks each. How many bunches will there be? How many stalks will be left over?

17. Hattie, at her roadside stand, sold 242 small boxes of strawberries at 9¢ a box. How much did she get for them?

18. Frank sold 2,496 pints of cider in a month. How many gallons was this?

19. Some big boys popped corn and sold it to earn money for the school. Their expenses were: rent of big popper, $1.00; cost of pop corn, $1.85; cost of butter used, $0.55. What were their total expenses?

They sold 268 bags of popped corn at 5 cents a bag. How much did they get for the popped corn?

Bessie Goes Shopping

It was raining and Bessie could not play outside. She thought it would be a lonesome day, but the mail man brought a folder telling of a sale at a big store. Bessie pretended she had lots of money, and went shopping.

1. "Rayon Dresses. Ages 7 to 11. Special at $1.98." Bessie bought 7 of these, a different one for each day of the week. How much did they all cost?

2. On the next page, she bought one sweater for $1.29, another sweater for $2.29, and a jacket for $3.98. How much did these cost?

3. On the next page she bought a knitting bag for 69 cents, a pair of knitting needles for 39 cents, and 4 balls of best wool yarn at 89 cents a ball. How much did the 4 balls of yarn cost? How much did the yarn, the knitting bag, and the knitting needles together cost?

4. She then bought 2 pairs of shoes at $2.39 a pair and a handbag for $1.98. How much did these cost?

5. Next she bought a small phonograph, a lunch kit, and a pair of roller skates. All these cost $18.03. How much change would she get from a 20-dollar bill?

First Round-Up for Unit 6

What is a rule for multiplying a number

1. by 10? **2.** by 40? **3.** by 60?

Write these products quickly.

4.

12	26	34	47	58	64	79	83
20	40	60	30	80	50	10	90

Copy and multiply. Check.

5.

38	67	19	53	27	68	82	38
26	74	36	39	34	12	53	37

Multiply the easier way and name each product correctly.

6. 36×3 in. $72 \times \$8$ 48×4 ft.

7. 42×6 in. $66 \times \$9$ 81×2 ft.

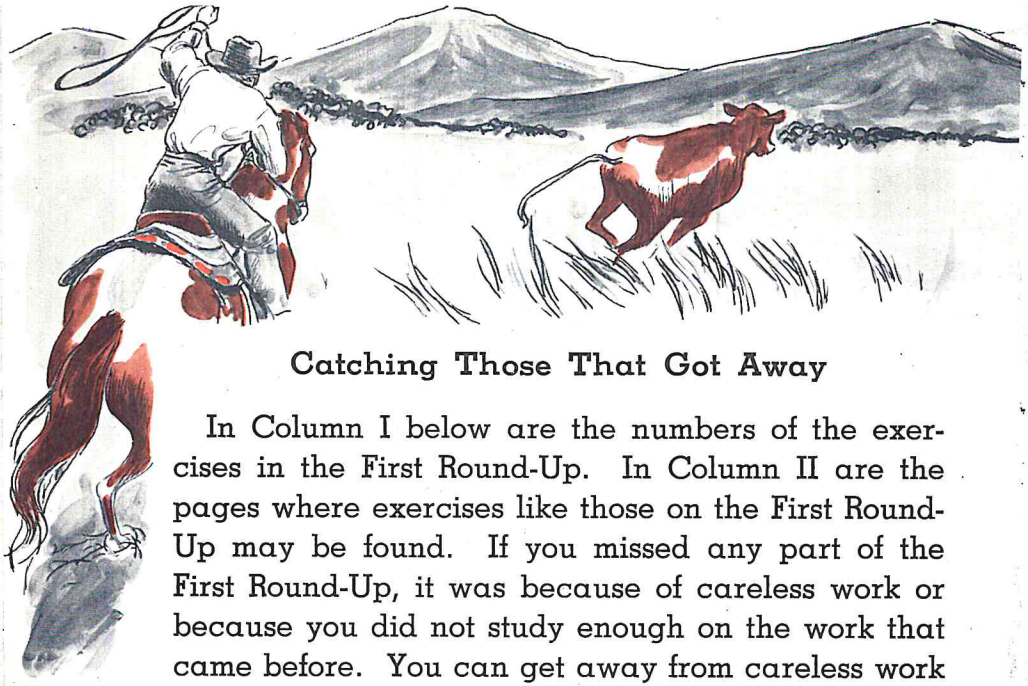
8. 96×7 in. $54 \times \$5$ 78×9 ft.

Multiply. Write the dollar sign and the cents point correctly in each product.

9. $21 \times \$1.25$ $28 \times \$3.75$ $96 \times \$.83$

10. $44 \times \$6.78$ $54 \times \$2.69$ $85 \times \$.58$

Those who missed less than four exercises in the First Round-Up will work on page 153. Other pupils will work on page 152.



Catching Those That Got Away

In Column I below are the numbers of the exercises in the First Round-Up. In Column II are the pages where exercises like those on the First Round-Up may be found. If you missed any part of the First Round-Up, it was because of careless work or because you did not study enough on the work that came before. You can get away from careless work by being careful. You can make up the back work by doing 10 exercises from Column II for each one you missed in Column I.

Column I	Column II
1, 2, 3, 4	Pages 136, 137
5	Pages 139, 142
6, 7, 8	Page 107
9, 10	Page 146

Have you done 10 back exercises for each one that you missed? Do the First Round-Up again, and try to get every one right.

Now write these products.

37	37	37	37	37	37	37	37
3	6	9	12	15	18	21	27

Roping the Tough Ones

1. The population of Alaska in 1940 was 72,524. This was an increase of 13,246 over the population in 1930. What was the population in 1930?

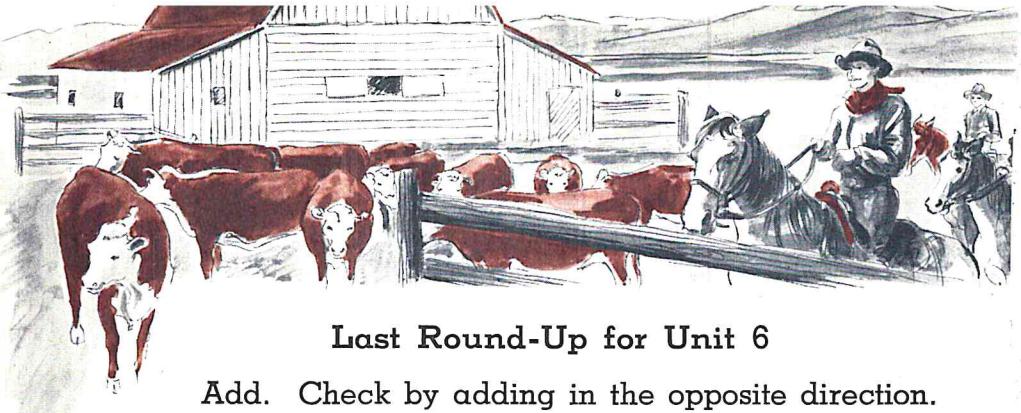
2. The names of the six largest cities and their populations were as follows in 1940; Juneau, 5,729; Ketchikan, 4,695; Anchorage, 3,495; Fairbanks, 3,455; Sitka, 1,987; Petersburg, 2,187. What is the total population of these six cities?

3. The longest river in the United States is 3,988 miles long. The Yukon River in Alaska is 2,400 miles long. How much longer is the Mississippi-Missouri, our longest river, than the Yukon?

4. About 32,000 beavers are caught each year in Alaska, and their furs bring about $15 each. About how much do the trappers get for all their furs?

5. In a recent year, 47,646 seals were killed off St. Paul's Island, and 12,872 were killed off St. George's Island. How many were killed in all?

6. The Yellowstone is the largest national park in the United States. It covers 3,472 square miles. Mt. McKinley National Park in Alaska covers 3,432 square miles. How much larger is Yellowstone Park?



Last Round-Up for Unit 6

Add. Check by adding in the opposite direction.

1.

			238	16	$0.10
69	$0.23	6	470	329	.60
39	1.22	4	8	1	.95
5	.86	3	34	26	.02
25	.03	0	900	5	.18

2. Subtract. Check by adding.

475	8,769	506	1,000	$4.46	34,126
321	238	206	43	3.27	13,476

3. Divide 5,985 tulip bulbs equally among 9 rooms of pupils.

4. Divide 245 tulip bulbs equally among 7 pupils.

5. There are 125 tulip bulbs in a box. How many are there in 26 boxes? In 35? In 95?

6. Marie planted 124 tulip bulbs. One-fourth of them did not bloom. How many did not bloom? How many did bloom?

7. John bought 72 tulip bulbs. One third were red, one half were yellow, and the others were mixed colors. How many red ones were there? How many yellow ones?

8. Tulip bulbs cost 9 cents each. What would be the cost of 18 bulbs? Of 60 bulbs? Of 96 bulbs?

Ways of Keeping Count

This is a picture of long ago. The farmer has brought corn to town to sell. Each time he carries a basket of corn into the barn, he drops a corncob into a box at the door. When all the corn is in, he counts the corncobs at the door. This was his way of keeping count.

Indians on our western plains once had great herds of ponies. Each Indian had a leather bag with a small stone in it for each pony that he owned. If a pony died or was lost, he took a pebble out of the bag. This was the Indians' way of keeping count.

Sometimes we keep score by making a stroke / every time we want to show 1. When we have 4 strokes //// , we cross them with a line 𝍸 to show 5.

What is the score of the Reds?	Reds 𝍸 //
Of the Browns?	Browns ////
How many votes did June get?	June 𝍸 ////
How many votes did Jack get?	Jack 𝍸 𝍸 𝍸/

Reading and Writing Large Numbers

You read 6,000 as six thousand.

You read 34,000 as thirty-four thousand.

You read 427,000 as four hundred twenty-seven thousand.

1. Read these numbers.

4,000	8,000	2,000	9,000	7,000
12,000	31,000	78,000	54,000	63,000
423,000	548,000	617,000	958,000	815,000

2. Write these numbers in figures.

Six thousand Three hundred twelve thousand

Sixteen thousand Six hundred four thousand

You do not say "and" in reading whole numbers.

3. The table below gives the populations of four large cities for different years. Read the numbers.

	1920	1930	1940
Atlanta	200,616	270,366	302,538
Birmingham	178,806	259,678	264,151
Cincinnati	401,247	451,160	452,852
Denver	256,491	287,861	318,415

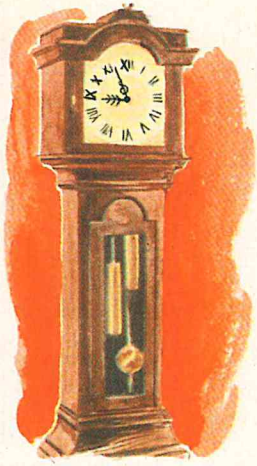
Mr. Jones paid $1,258.75 for a new car. You read this number as one thousand two hundred fifty-eight dollars and seventy-five cents.

You must say "and" for a cents point.

4. Read these numbers.

$8,476.34 $29,406.98 $543,190.60

More About Roman Numbers



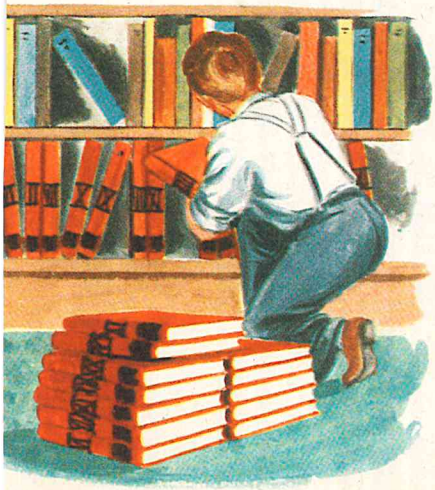
You have already learned to write Roman numbers to 12. You used the letters I, V, and X.

Write the numbers 1 to 12 in Roman numbers.

The numbers 13 to 39 may also be written in Roman numbers with the same three letters.

What number or Roman number belongs in place of each ?.

1.	X	10	XX	20	XXX	30
2.	XI	?	XXI	?	XXXI	?
3.	?	12	?	22	?	32
4.	?	13	?	23	?	33
5.	XIV	?	XXIV	?	XXXIV	?
6.	XV	?	XXV	?	XXXV	?
7.	XVI	16	XXVI	?	?	36
8.	?	17	XXVII	?	?	37
9.	?	18	?	28	?	38
10.	XIX	19	?	29	XXXIX	?



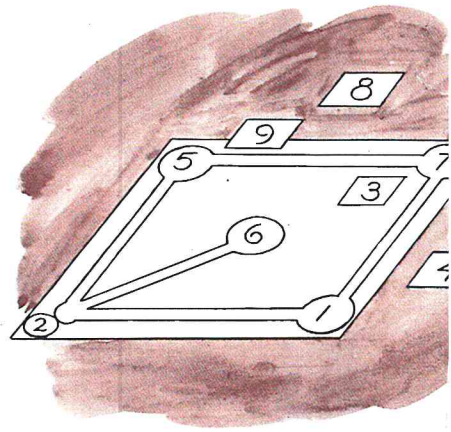
Bill is in trouble. The books of the set are numbered with Roman numbers and are all mixed up. Help him to arrange the books on a shelf. Draw a picture showing the books arranged correctly.

A Ball Game

I. Draw this baseball diamond on the blackboard. Number just as you see here.

II. Copy the row of numbers sitting on the bench on the blackboard, too.

III. Choose two captains. These captains will choose teams of players.



The Game

1. The captain of a team will point to one of his players and then to one of the numbers in the rows.

2. The player must add this number to ALL the numbers on the diamond.

If the player gets them all right, his team gets a home run.

3. Now the other captain gets a turn.

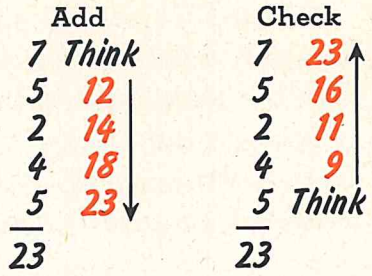
Here are the Numbers Sitting on the Bench Waiting to Be Called

A.	13	16	19	10	18	14	11	17	15	12
B.	28	22	25	29	27	21	24	26	20	23
C.	33	38	30	37	34	31	36	39	32	35

Down and Up the Columns in Addition

To add the column at the right, begin at the top and think 12, 14, 18, 23. The sum is **23**.

To check, begin at the bottom and think 9, 11, 16, 23. Since we found the same sum adding up that we found adding down, the answer checks.

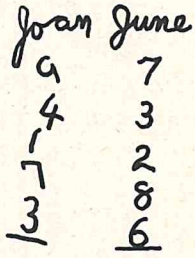


Add and check.

1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
5	5	3	7	5	4	6	4	1	3
5	0	4	1	2	1	5	0	4	9
3	8	9	8	7	7	4	3	3	6
7	6	1	6	3	8	3	1	4	8
4	2	5	4	8	2	7	5	2	3

In copying numbers to be added, you must make your figures neatly and write them in straight columns. If you do not, it will be hard for you to find the correct sums.

Do you think Joan or June is more likely to add and find the correct answer?



Write these numbers neatly in straight columns and add.

11. 1, 4, 8, 2, 6

12. 8, 5, 8, 1, 7

13. 9, 8, 1, 5, 6

14. 6, 7, 2, 0, 8

Adding for Our Benefit Show

Our school gave a picture show to make money for the Red Cross. We sold tickets for the show man, and he gave part of the money to the Red Cross.

We sold 495 tickets on Monday, 386 on Tuesday, 527 on Wednesday, 164 on Thursday, and 573 on Friday. How many tickets did we sell in the five days?

Write the numbers neatly in straight columns.

Add the ones column down. Think 11, 18, 22, 25. Write **5** under 3 and carry 2.

Add the tens column down. Think 11 (2 that was carried and 9), 19, 21, 27, 34. Write **4** under 7 and carry 3.

Add the hundreds column down. Think 7, 10, 15, 16, 21. Write **21.**

The sum is **2,145**. To check, add the columns up.

Add and check these ticket sales.

1.	72	39	25	46	542	387	218
	81	44	80	78	38	219	163
	35	89	86	17	627	401	272
	10	26	7	88	596	43	780
	33	7	30	9	73	8	564

Copy neatly in straight columns and add these ticket sales.

2. 46, 73, 91, 28, 62

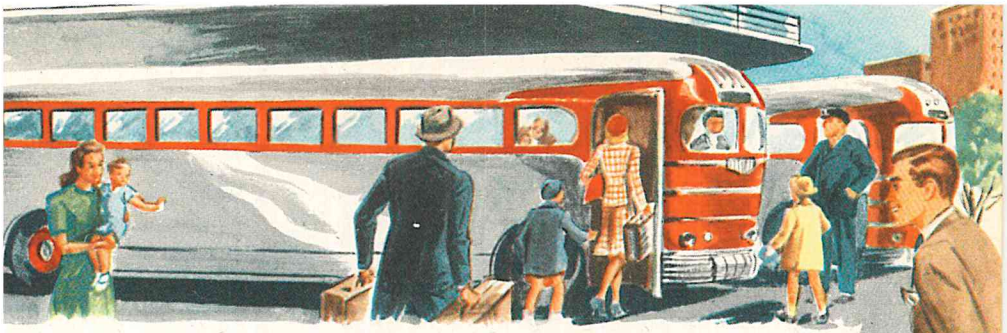
3. 81, 16, 43, 90, 28

4. 67, 15, 38, 75, 23

5. 792, 473, 168, 309, 517

6. 910, 406, 732, 814, 973

7. 675, 309, 884, 763, 196



All Aboard!

The table below gives the automobile distances between some eastern cities. From the table you read that it is 990 miles from Boston to Chicago, that it is 880 miles from Boston to Cincinnati, and so on.

How far is it from Detroit to New York?

How far is it from Chicago to St. Louis?

How far is it from St. Louis to Chicago?

	Boston	Chicago	Cincinnati	Detroit	New York	St. Louis
Boston	0	990	880	718	221	1193
Chicago	990	0	294	272	831	294
Cincinnati	880	294	0	254	660	343
Detroit	718	272	254	0	631	526
New York	221	831	660	631	0	976
St. Louis	1193	294	343	526	976	0

Play "All Aboard!" Have a caller name two cities. Look at the table and try to be the first to tell the distance between them.

Is Your Subtraction Rusty?

Write these remainders on folded paper. Only 2 minutes are allowed.

1.	9	8	9	7	8	9	7	8
	4	3	2	4	2	6	2	5
2.	14	13	11	15	12	11	10	12
	8	4	3	6	8	2	4	5
3.	12	11	14	15	13	11	16	11
	6	4	9	7	5	5	9	7
4.	11	14	12	14	13	12	12	14
	8	5	7	6	9	9	4	7
5.	18	11	10	15	10	16	17	13
	9	6	6	8	3	8	9	7
6.	11	16	12	17	13	10	15	13
	9	7	3	8	6	2	9	8

Study at the bottom of page 50 a good way to check subtraction.

Subtract and check.

7.	38	49	84	71	596	847	839
	26	13	62	20	401	535	817
8.	54	78	76	97	598	864	198
	22	38	33	6	317	420	136

Subtraction with Borrowing

1. Subtract 286 from 923.

Real Example	*You Think*	
923	1 13 9 2 3	8 11 13 9 2 3
286	2 8 6	2 8 6
		6 3 7

Look at the real example. Think 6 from 13 is 7.
Write 7 under 6.
Think 8 from 11 is 3. Write 3 under 8.
Think 2 from 8 is 6. Write 6 under 2.

Subtract and check.

2.	85	23	91	52	64	76	38	57
	67	16	32	36	48	39	29	18
3.	71	63	84	57	92	45	33	53
	28	44	57	18	35	26	15	37
4.	83	41	74	90	65	55	60	94
	37	15	48	13	6	8	4	7

5.	993	682	492	533	130	261
	678	367	156	319	18	129
6.	512	936	341	756	435	281
	267	479	183	277	98	193
7.	562	612	508	716	824	931
	217	314	329	309	518	438

First Aid Station

Some of you may have made mistakes on page 163. The work below will help you not to make these mistakes again. Study the examples below. Then cover the row of answers and write the remainders on folded paper.

1.	56	48	77	89	367	545	635
	8	6	9	5	83	28	97
	48	42	68	84	284	517	538
2.	66	59	73	91	375	436	541
	57	52	68	82	292	370	469
	9	7	5	9	83	66	72

3.	716	310	517	917	212	615
	347	192	209	639	48	547
	369	118	308	278	164	68

4.	5016	6104	8003	7018	9103	4004
	3259	2825	1536	2109	5006	2009
	1757	3279	6467	4909	4097	1995

If any of the examples has given trouble, have it put on the blackboard and have each step explained. When you have finished this page, try page 163 again.

Sheep on a Small Farm

1. Mr. Wood had 54 old sheep and 60 lambs. How many more lambs than old sheep did he have?

2. When it was time to sell the lambs, he could find only 57 lambs and 53 old sheep. How many of both did he find?

3. How many lambs were lost? How many old sheep were lost?

4. Mr. Woods sold 16 of the largest lambs at $6 each. How much did these bring?

5. He sold 17 other lambs at $5 each. How much did these bring?

6. There were 24 other lambs that he sold for $4.25 each. How much did these bring?

7. Last year he sheared about 4 pounds of wool from each of 67 old sheep. How many pounds of wool was this?

8. At 37 cents a pound, how much is the wool from one sheep worth?

9. Last year he sold 24 sheep at $5.67 each. How much did these bring?

10. One year he sold 68 lambs, the next year 56 lambs, the next year 61 lambs, and the next year 57 lambs. How many did he sell in the four years?

Times and Times-And

All the multiplication facts are given in a table on page 72. Practice on these facts before you take the test below.

Have you practiced? You should be able to do this test in 1 minute. Write the products on folded paper.

1.	9	7	4	9	3	6	7	9
	6	7	9	7	8	9	8	5
2.	8	9	5	7	8	9	7	7
	4	8	7	6	8	4	9	3
3.	9	8	9	6	4	6	8	9
	9	7	6	8	8	7	9	3

Before you can multiply and carry, you must know or must be able to get the times-and facts quickly. You can review these on pages 58, 59, 84, 86, and 104. Study these pages carefully and you will do well on the test below. Write the answers only. If you are a good worker, you can do them in 2 minutes.

4.	$9\times2+5$	$7\times6+3$	$5\times4+1$
5.	$8\times0+2$	$4\times9+2$	$6\times7+4$
6.	$7\times1+6$	$9\times9+8$	$5\times0+2$
7.	$3\times3+1$	$7\times9+6$	$8\times3+4$
8.	$9\times3+3$	$8\times9+7$	$6\times5+5$
9.	$4\times2+3$	$2\times8+1$	$7\times8+6$
10.	$3\times9+2$	$9\times4+5$	$8\times7+3$
11.	$8\times1+4$	$7\times0+5$	$9\times8+4$

Harder Multiplication with Checking

1. Multiply 328 by 47. Check.

Think $7 \times 328 = 2296$. Write **2296** so that **6** is under the 7 of 47.

Think $4 \times 328 = 1312$. Write **1312** so that **2** is under the 4 of 47.

```
 328
  47
----
2296
1312
----
15416  product
```

Add 2296 and 1312 as they are written.

One way to check is to change the places of the numbers you multiplied and multiply again. This way is shown at the right.

Another way to check is to cover the work you did first and do it again. Or you may copy the example a second time and do the work a second time.

```
  47
 328
----
 376
  94
 141
----
15416
```

Copy and multiply. Check.

2.	428 × 34	673 × 28	746 × 32	1928 × 83	4634 × 95	6364 × 38
3.	984 × 17	563 × 41	918 × 53	8457 × 43	5365 × 82	7942 × 29
4.	346 × 78	579 × 51	298 × 67	3272 × 49	2567 × 23	4932 × 16

Remember to Multiply the Easier Way

1. Mr. Martin sold 32 pairs of shoes at $6 a pair. How much did he get for all of them?

One way to find the answer is to write 32 under $6 and multiply. The product is 192 and is named dollars.

An easier way is to write 6 under 32 and multiply. The product is 192. By the sense of the problem you know it is named dollars.

One Way	Easier Way
$6	32
32	6
12	$192
18	
$192	

2. Mr. Hay buys 7 quarts of milk a week. How many quarts does he buy in 52 weeks?

3. There are 4 quarts in a gallon. A grocer bought 86 gallons of vinegar. How many quarts was this?

4. A jar holds 9 ounces of honey. How many ounces will 326 such jars hold?

5. Mr. Jordan worked 8 hours a day for 286 days. How many hours was this?

6. If ducks weigh 6 pounds each, how many pounds will 144 ducks weigh?

Multiply the easier way. Name the answers.

7.	28×5 miles	94×6 quarts	35×$7
8.	67×3 pounds	76×5 inches	59×$4
9.	46×8 yards	84×7 apples	73×$9
10.	48×7 inches	96×5 miles	84×4¢
11.	72×2 gallons	18×9 pounds	76×6¢

Omaha to Denver—	556 miles
Denver to Los Angeles—	1,268 miles
Los Angeles to Dallas—	1,446 miles
Dallas to Omaha—	705 miles

More Travel Problems

1. Betty and Earl live in Omaha. They are starting on their vacation. They will go to Denver, from there to Los Angeles, from there to Dallas, and then back to Omaha. How many miles is this?

2. Within the last year, their father has made the trip between Omaha and Denver 28 times. How many miles is this?

3. How much farther is it from Omaha to Los Angeles than from Omaha to Denver?

4. If it costs 6 cents a mile to drive the car, how much will it cost to drive from Omaha to Dallas?

5. Mr. Gray has an older car, and it costs 7 cents a mile to drive it. How much will it cost Mr. Gray to drive from Denver to Los Angeles?

6. Plan a trip that you would like to take. How many miles would it be? At 7 cents a mile, how much would it cost to drive it?

The 90 Division Facts

You can see 81 division facts in the table below.

	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9
2	2	4	6	8	10	12	14	16	18
3	3	6	9	12	15	18	21	24	27
4	4	8	12	16	20	24	28	32	36
5	5	10	15	20	25	30	35	40	45
6	6	12	18	24	30	36	42	48	54
7	7	14	21	28	35	42	49	56	63
8	8	16	24	32	40	48	56	64	72
9	9	18	27	36	45	54	63	72	81

Read the first row of divisions from left to right: 1 divided by 1 is 1, 2 divided by 1 is 2, 3 divided by 1 is 3, and so on. Read all the way across.

Read the second row: 2 divided by 2 is 1, 4 divided by 2 is 2, 6 divided by 2 is 3, and so on. Read all the way across.

The station numbers are black. The divisor of any station number is in the same row at the left; the quotient is at the top directly above the station number.

There are nine 0 division facts that are not in the table. These are easy to remember: each station number is 0 and each quotient is 0.

$$\begin{array}{ccccccc} 0 & 0 & 0 & 0 & 0 & 0 & 0 \\ 1\overline{)0} & 5\overline{)0} & 7\overline{)0} & 4\overline{)0} & 9\overline{)0} & 6\overline{)0} & 8\overline{)0} \end{array}$$

What is the quotient when 0 is divided by 2? By 3?

We are now ready for division that is not even. There is a test of division with a remainder at the bottom of this page. To get ready for the test, you should study the divisions of 2's and 3's on page 64; of 4's and 5's on page 66; of 6's on page 90; of 7's on page 92; of 8's on page 110; and of 9's on page 111. Then you will be able to do this test well.

Say or write the quotients and remainders.

2)	5	17	11	9	14	19	13	7	3
3)	21	13	19	11	26	22	16	10	28
4)	17	23	31	39	21	11	19	26	27
5)	3	9	49	33	21	47	15	38	32
6)	35	20	9	32	12	23	4	17	27
7)	8	16	20	25	30	35	41	43	29
8)	10	21	33	45	47	54	59	65	43
9)	15	22	28	35	42	45	30	50	60

Dividing for the Scout Leader

Scouts are selling tickets for the Scout circus. The scout leader asked Bill to divide packs of tickets among different groups of boys. He must make no mistakes. He checks every division.

1. Bill needs to divide a pack of 207 tickets among 9 boys. How many tickets will each get?

Divide

$$9\overline{)207}\quad 23,\ 18,\ 27,\ 27$$

Check

$$23 \times 9 = 207$$

2. Divide these packs of tickets for Bill.

$8\overline{)504}$ $7\overline{)203}$ $6\overline{)492}$ $9\overline{)567}$ $4\overline{)276}$ $5\overline{)605}$

3. Bill needs to divide a pack of 419 tickets among 6 boys. How many tickets will each boy get?

Divide

$$6\overline{)419}\quad 69\ r\ 5,\ 36,\ 59,\ 54,\ 5$$

Check

$$69 \times 6 = 414,\quad 414 + 5 = 419$$

4. Divide 659 tickets among 9 boys; 667 among 8 boys.

Division Practice

1.	$5\overline{)155}$	$6\overline{)186}$	$6\overline{)240}$	$5\overline{)250}$	$6\overline{)306}$
2.	$5\overline{)515}$	$4\overline{)172}$	$6\overline{)192}$	$7\overline{)217}$	$7\overline{)161}$
3.	$6\overline{)156}$	$6\overline{)294}$	$8\overline{)248}$	$8\overline{)184}$	$7\overline{)175}$
4.	$8\overline{)448}$	$6\overline{)402}$	$7\overline{)903}$	$6\overline{)924}$	$2\overline{)136}$
5.	$2\overline{)198}$	$2\overline{)87}$	$2\overline{)436}$	$2\overline{)417}$	$8\overline{)759}$
6.	$3\overline{)129}$	$3\overline{)135}$	$3\overline{)172}$	$3\overline{)157}$	$3\overline{)260}$
7.	$5\overline{)375}$	$4\overline{)840}$	$4\overline{)924}$	$4\overline{)170}$	$4\overline{)224}$
8.	$4\overline{)735}$	$6\overline{)570}$	$9\overline{)763}$	$9\overline{)479}$	$9\overline{)888}$

9. Divide each number in Row A by each number in Row B.

Row A	1764	2016	2898	3402	3906	4788
Row B	2	3	7	9	6	8

10. Divide each number in Row A by each number in Row B.

Row A	2496	2784	3024	3408	4032	4368
Row B	2	3	4	6	8	7

The Farmer's Wife Earns Some Money

Mrs. Johnson wanted to earn some money. Here are some of the problems she had to work.

1. She had 144 tomato plants to set in 8 equal rows. How many plants would she put in a row?

2. She expects to raise about 15 good tomatoes on each plant. How many good tomatoes is this?

3. If the tomato plants do well, she expects that 6 of them will grow 1 bushel of tomatoes. How many bushels of tomatoes will 144 plants grow?

4. If they do not do so well, it will take 9 plants to grow a bushel of tomatoes. How many bushels of tomatoes will 144 plants grow in this case?

5. Last year she sold some large tomatoes at 4¢ each. How many large tomatoes could one buy for 20¢?

6. She canned three bushels of tomatoes at 72¢ a bushel. She got 18 quarts of canned tomatoes from each bushel of fresh tomatoes. She said this was only 4¢ a quart for the tomatoes. Was she right?

7. She has 24 berry bushes in her garden. One day she picked 48 pints of berries and sold them at 6¢ a pint. How many pints did she pick from each bush? How much did she get for the berries?

8. She picked 324 quarts from cherry trees in her orchard. How many gallons was this? How much could she get for them at 8¢ a quart?

9. She sold 576 pints of black raspberries and 168 pints of red raspberries. How many gallons of black raspberries did she sell? How many gallons of red raspberries did she sell?

10. How much did she get for her black raspberries at 6¢ a pint?

11. How much did she get for her red raspberries at 7 cents a pint?

12. Last year she sold 3,840 gallons of milk; this year she sold 4,573 gallons. How many more gallons did she sell this year?

13. She read in a farm magazine that milk cows were worth $95 each in 1920, $32 each in 1933, and $65 each in 1941. How much less would a cow cost in 1933 than in 1920? How much more would a cow cost in 1941 than in 1933?

14. How much are 10 cows worth at $95 each? At $32 each? At $65 each?

15. In one month she sold 36 hundred pounds of milk at $1.89 a hundred pounds. How much did she get?

16. Mrs. Johnson had 9 rows of cabbage with 36 plants to the row. How many cabbage plants did she have? She sold these at 4¢ each. How much did she get for the cabbage she sold?

Helping in the Supply Room

John and Mary help the teacher in the supply room each week. Here are some of the arithmetic problems that John and Mary must work.

1. If there are 144 pencils in a box, how many pencils are there in 12 boxes?

2. If there are 200 pieces of chalk in a box, how many will be left when you take out 48 pieces?

3. There are 288 notebooks on the shelf. If they are divided equally among 8 rooms, how many notebooks will each room receive?

4. Divide 215 tablets of paper equally among 9 rooms. How many tablets will each receive and how many will be left over?

5. There are 350 erasers in a box. If John takes 72 erasers out of the box, how many will be left?

6. There were 115 pieces of crayon in one box and 65 pieces in another. Mary put them all in one box. How many pieces did she have in the box?

7. Mary counted the sheets of colored paper. She found 145 red, 214 blue, 89 green, and 147 yellow. How many sheets were there in all?

8. The supply wagon brought 576 colored crayons. How many were there of each color if $\frac{1}{6}$ were blue, $\frac{1}{8}$ were green, $\frac{1}{3}$ were red, $\frac{1}{4}$ were yellow, and $\frac{1}{8}$ were orange?

First Round-Up for Unit 7

Copy and add. Check.

1.

		6	3	6	34	56	
2	4	5	8	7	54	9	567
3	0	7	8	5	69	87	10
5	9	3	7	6	35	45	785
6	2	8	6	9	28	7	387

2. Copy and subtract. Check.

12,763	24,639	33,107	51,076	34,406
8,194	9,706	7,068	5,378	5,009

Copy and multiply. Check.

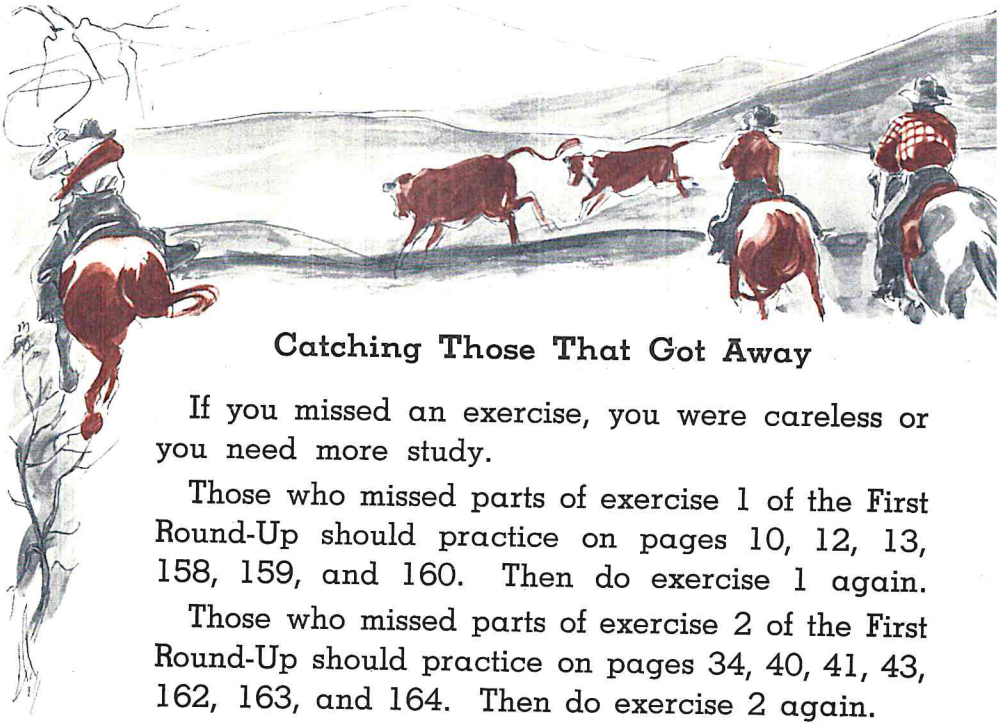
3.	75	97	68	43	763	482	5800
	39	15	92	59	4	7	8

Copy and divide. Check.

4. $7\overline{)154}$ $7\overline{)231}$ $8\overline{)208}$ $8\overline{)336}$ $9\overline{)468}$

5. $9\overline{)747}$ $6\overline{)222}$ $4\overline{)184}$ $9\overline{)486}$ $8\overline{)976}$

Those who made more than four mistakes will work on page 178. The others will work on page 179.



Catching Those That Got Away

If you missed an exercise, you were careless or you need more study.

Those who missed parts of exercise 1 of the First Round-Up should practice on pages 10, 12, 13, 158, 159, and 160. Then do exercise 1 again.

Those who missed parts of exercise 2 of the First Round-Up should practice on pages 34, 40, 41, 43, 162, 163, and 164. Then do exercise 2 again.

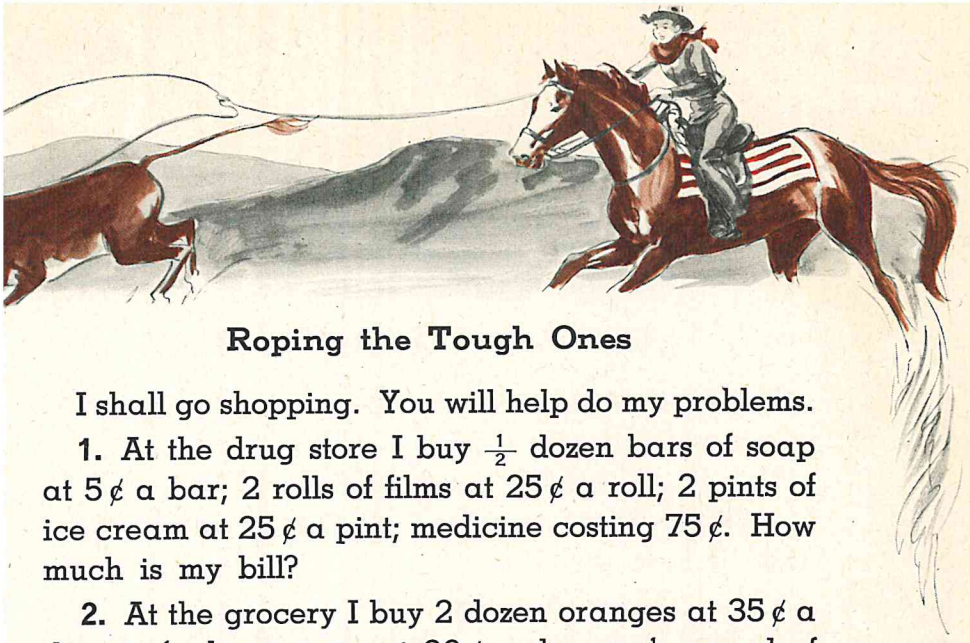
Those who missed parts of exercise 3 of the First Round-Up should practice on pages 166, 167, and 168. Then do exercise 3 again.

Those who missed parts of exercises 4 and 5 should practice on pages 170, 171, and 173. Then do exercises 4 and 5 again.

Practice does not help much unless you think about what you are doing all the time you are at work.

1. The gardener planted 32 elms, 4 oaks, 15 maples, 3 willows, and 7 pine trees. How many trees did he plant?

2. There were 48 rows of celery with 126 plants to a row. How many plants were there?



Roping the Tough Ones

I shall go shopping. You will help do my problems.

1. At the drug store I buy $\frac{1}{2}$ dozen bars of soap at 5¢ a bar; 2 rolls of films at 25¢ a roll; 2 pints of ice cream at 25¢ a pint; medicine costing 75¢. How much is my bill?

2. At the grocery I buy 2 dozen oranges at 35¢ a dozen; $\frac{1}{2}$ dozen eggs at 36¢ a dozen; $\frac{1}{4}$ pound of butter at 52¢ a pound; 1 bushel of tomatoes at $1.10 a bushel. How much is my bill?

3. At the corner store I buy 6 yards of cloth at 26¢ a yard; 3 dozen buttons at 12¢ a dozen; 4 spools of thread at 6¢ each; 24 yards of lace at 18¢ a yard. How much is my bill?

You can now go shopping. The class will do your problems for you.

4. Bring a grocery bill from home and copy it on the blackboard. Ask the class to find the amount of the bill.

5. Make up a grocery bill and copy it on the blackboard. Ask the class to find the amount.

6. Make a list of things in arithmetic a boy or girl must be able to do to help in a grocery store.

Last Round-Up for Unit 7

1. Write these Roman numbers as we write numbers today.

I V X XXX XV XXIV XVII XIX

2. Write these numbers as the Romans would have written them.

21 32 18 14 39 11 22 7

3. Milk costs 5¢ a bottle. Alice drinks a bottle a day for 20 days. What is the cost?

4. The school sold 452 bottles of milk on Monday, 524 on Tuesday, and 366 on Wednesday. How many bottles were sold in the three days?

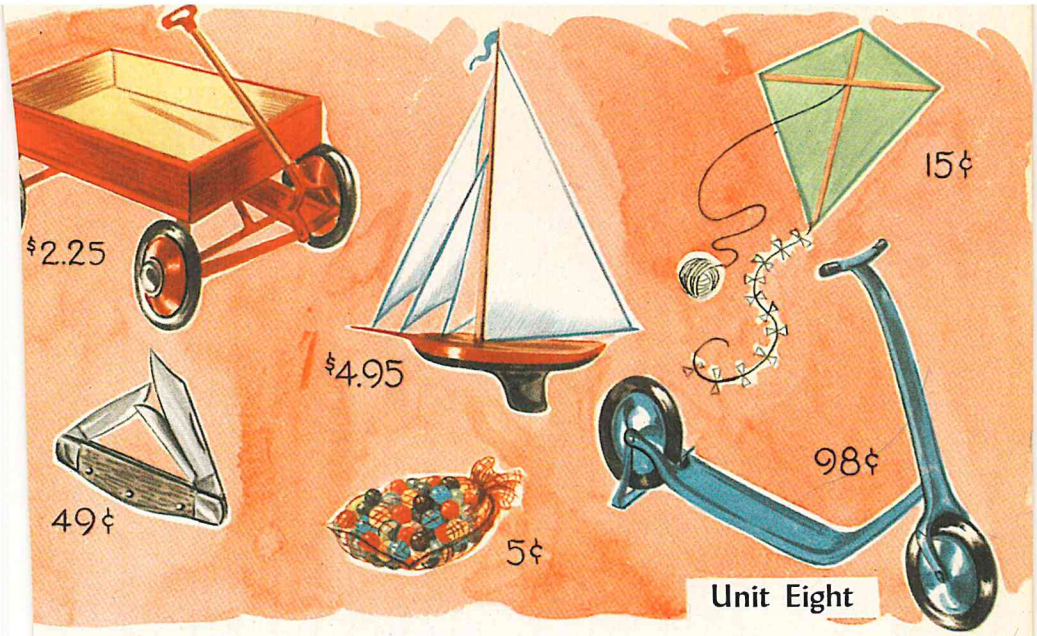
5. One month the school sold 8,546 bottles and the next month only 7,309 bottles. How many more bottles were sold the first month?

6. The milkman delivered 624 bottles of milk one day. One-fourth of it was chocolate milk. How many bottles of chocolate milk were there?

7. A lamb weighed 86 pounds. How much did it bring at 9¢ a pound?

8. Mrs. Johnson sold 126 pecks of peaches at 65 cents a peck. How much did she get for them?

9. A school received 1728 pencils to be divided among eight rooms. How many did each room get?



Word Problems

1. Find the cost of a wagon, a scooter, a knife, and a kite.

2. Find the cost of 8 knives.

3. Clarence had 78¢ and bought a kite. How much did he have left?

4. What is the difference in the price of a wagon and the price of a scooter?

5. Leonard has $1.14 and wants to buy a wagon. How much more does he need?

6. Henry has 96 marbles to divide evenly among 6 friends. How many marbles will each get?

7. Jack said a scooter cost exactly as much as two knives. Was he right?

8. For each problem above tell how you know what to do to find the right answer.

Two-Question Problems

1. There are 4 pigs and a calf in a field. The pigs weigh 60 pounds each, and the calf weighs 210 pounds.

How much do the 4 pigs weigh?

How much do the 4 pigs and the calf weigh?

First Step
To Find First Answer

60 pounds
4
240 pounds

Second Step
To Find Second Answer

240 pounds pigs weigh
210 pounds calf weighs
450 pounds all weigh

In two-question problems, you find the answer to the first question and use this first answer to find the answer to the second question.

2. Each of 3 black chickens weighs 3 pounds. The white chicken weighs 4 pounds. How much do the 3 black chickens weigh? How much do all 4 chickens weigh?

3. Each of the black chickens laid 3 eggs last week and the white chicken laid 5 eggs. How many eggs did the black chickens lay? How many eggs did they all lay?

4. Mrs. Jones bought 2 dozen oranges at 35¢ a dozen and a loaf of bread for 12¢. How much did the oranges cost? How much was her whole bill?

5. Mrs. Taft paid 12¢ each for 4 loaves of bread and 35¢ for a dozen oranges. How much did the bread cost? How much was her whole bill?

6. Mrs. Jones had $4.89. She spent $1.25 for meat, $0.35 for bread, and $0.50 for fruit. How much did she spend in all? How much was left?

7. Mr. Preston sells honey in 5-pound buckets. He sold 6 buckets on Monday, 4 on Tuesday, and 3 on Wednesday. How many buckets of honey did he sell? How many pounds was this?

8. Frank has 29 red marbles, 17 green ones, 38 blue ones, and 14 yellow ones. He wants to divide all the marbles he has equally among 7 boys. How many marbles does he have? How many marbles will each boy get?

9. Mrs. Taft bought a scarf for $1.95 and a sweater for $2.25, and gave the sales girl a $5 bill. How much did the scarf and the sweater cost? How much change would Mrs. Taft get back?

10. Bob had $8 when he went to town. He spent $2.49 for clothes, and on his way home he collected $5.50 for work he had done. How much did he have after buying the clothes? How much did he have after collecting what was owed him?

11. Mr. Brown divided 6 dozen cookies equally among 8 children. How many cookies were there? How many did each child get?

Two-Step Problems

1. Mr. Boone took his 3 boys to a circus. A boy's ticket costs 25¢ and a man's ticket costs 35¢. How much did the 4 tickets cost?

There are two questions to this problem, but only the second one is asked. The first step in solving a two-step problem is to ask the first question and find its answer. The second step is to use the first answer to find the answer to the question that is asked.

First Step	*Second Step*
$0.25	*$0.75 cost of boys' tickets*
3	*.35 cost of man's ticket*
$0.75	*$1.10 cost of 4 tickets*

2. Small loaves of bread weigh 12 ounces each, and a large loaf weighs 20 ounces. Find the weight of 6 small loaves and a large loaf.

The first question is not asked. What is it? What is the first answer? What is the second question?

3. There are 50 yards of ribbon on a spool. How many yards are left after the clerk has sold 3 pieces each 8 yards long?

What is the first question? What is the first answer? What is the second question?

4. Jack had 50¢. How much will he have left after buying 4 ice-cream cones at 5¢ each?

What is the first question? What is the first answer? What is the second question?

5. Marjorie had 72 pieces of candy. She gave 24 pieces to her mother and divided the rest equally among 6 friends. How many pieces did each friend get?

6. Newspapers are sold for 3¢ each. On the different days of last week, Neil sold 18, 23, 19, 17, 26, and 32 newspapers. How much did he receive for all the papers that he sold?

7. Helen picked 32 quarts of strawberries. She gave 14 quarts to her mother and sold the remainder at 10¢ a quart. How much did she get for what she sold?

8. Betty wants 50 roses for a party. She has 12 red roses, 14 white roses, and 22 yellow roses. How many more roses does she need?

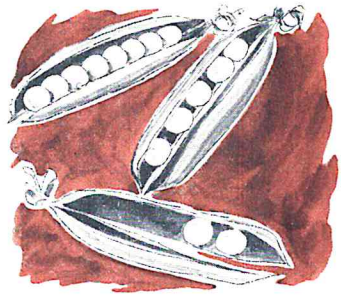
9. Mr. Post divided $16 equally among his four children. Jack Post used $1.98 of his part to buy a pair of skates. How much did he have left?

10. Tom had 32¢. He used 15¢ of it for carfare to do an errand for Mr. White. Mr. White gave him 50¢ for doing the errand. How much did Tom have then?

11. There were 28 chocolate cookies, 33 coconut cookies, and 11 other cookies on a plate. Mrs. Mills divided the cookies among 6 children. How many did each child have?

12. Ted had saved $11.68. He and two other boys collected scrap rubber and sold it for $2.70. If Ted received $\frac{1}{3}$ of the money from the scrap rubber, how much did he have then?

The Meaning of Average



1. There are 8 peas in one pod, 5 peas in another, and only 2 peas in the third. What is the average number of peas in a pod? That is, if the sum of all the peas were divided equally, how many peas would there be in each pod?

Find the sum.

8
5
2
---
15 peas

Divide the sum equally.

5 peas
3)15 peas

To find the average of several amounts, add the given amounts and divide the sum by the number of amounts.

2. What would be the average number of peas in a pod if there were 6 peas in one pod, 8 peas in another, and 7 peas in the third?

3. Mary read 24 pages of her book on Monday, 15 pages Tuesday, 22 pages Wednesday, and 11 pages Thursday. What was the average number of pages she read a day?

4. A pair of twins together weigh 148 pounds. What is their average weight?

In this example the sum of their weights is given. You will only need to divide the sum equally to find the average.

Finding Averages

1. The Garfield School has 5 boys on a track team. Their weights are 82, 73, 84, 69, and 72 pounds. What is the total weight of the 5 boys? What is their average weight?

This is a two-question problem. What do you do to find the answer to the first question? To the second question?

2. The Grant School has 5 boys on a track team. Their weights are 76, 81, 67, 75, and 71 pounds. What is their average weight?

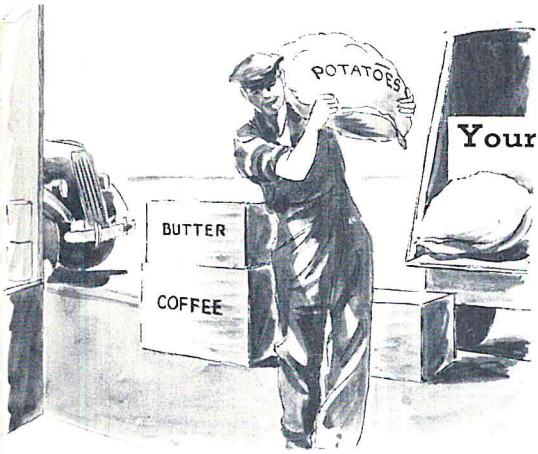
There are two questions in this problem, but only the second one is asked. What is the first question? How do you find the first answer? The second answer?

3. On different days last week, Mr. Hardy drove his car 28 miles, 37 miles, 10 miles, 54 miles, and 21 miles. What was the average number of miles he drove a day?

4. Mr. Short bought 4 lambs. One of them cost $4.85, another $5.90, another $5.30, and the fourth $6.03. What was the average cost?

5. These are Clara's grades. What is her average in each subject?

	Arithmetic	Language	Reading	Spelling	Geography
1st week	89	84	78	82	92
2nd week	86	83	80	84	82
3rd week	87	78	79	76	80
4th week	94	91	83	90	62



Your Grocer Uses Arithmetic

1. Mr. Henderson had 33 pounds of butter when he opened his store this morning. The dairy truck left 85 pounds more. During the day he sold 97 pounds. How much did he have left at the end of the day?

This is a two-question problem, but only the second question is asked. What is the first question?

2. Mr. Henderson had 218 pounds of coffee in stock. He sold 152 pounds and later received 125 pounds. How much did he have then?

The first question of this two-question problem is not asked. What is it?

3. He had 288 cans of pears in stock. During the morning he sold 97 cans and during the afternoon he sold 160 cans. How many cans did he have left?

4. He also had 288 cans of peas in stock. He received one lot of 432 cans and another lot of 720 cans. How many cans did he have then?

5. He had 292 bushels of potatoes. He had to throw 16 bushels of these away because they were spoiled, and he sold 83 bushels. How many bushels were left?

6. He had 78 pounds of coffee in a can, and sold 16 2-pound bags. How much did he have left?

Children in Business Use Arithmetic

1. Vernon gets 100 magazines to sell each week and returns those he cannot sell. Last week he returned 18. If he earns 4¢ on each magazine that he sells, how much did he earn last week?

2. Conrad makes 3¢ on each *Post* or *Journal* that he sells. Last week he sold 24 *Posts* and 17 *Journals.* How much did he make?

3. Ray delivers 41 *Stars* and 53 *Heralds* each day. How many does he deliver in 6 days?

4. Grace makes 15¢ on each *Needlework Magazine* that she sells. Last month she sold 28 magazines. How much of her money did she have left if she bought a dress costing $2.98?

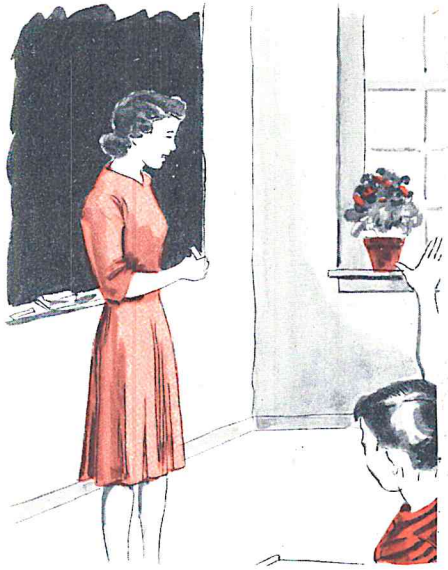
5. Jack, James, and Joe sell magazines and divide the earnings equally. Their weekly earnings for the past 5 weeks have been 82¢, 76¢, 45¢, 98¢, and 80¢. How much did each boy receive?

6. Last year the 3 boys earned $38.67 which they divided equally. Jack spent $8.35 of his share. How much did he have left?

7. Harry promised to sell 400 newspapers in 4 weeks. He sold 112 the first week. What average number will he need to sell the other weeks to sell the number he promised?

8. Tom earns $2.25 a week and spends $1.85 a week. How much can he save in 52 weeks?

Father's Arithmetic



Miss Stevens asked, "Does your father use arithmetic in his work?"

Most of the class did not know. They had never thought much about arithmetic used outside of school.

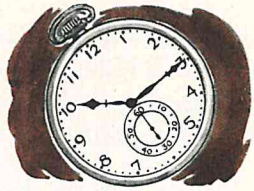
"Each of you ask your father and your mother, too," Miss Stevens continued. "I want some real problems. I do not want any make-believe problems. We want to see the problems that people we know really work in their everyday life."

The class thought this would be fun. They worked hard getting these real problems. They brought a great many to school. Miss Stevens put them on the blackboard, and the class felt very grown-up working the exact problems that grown-ups have to work.

Would you like to work these same problems that the children brought in and that Miss Stevens wrote on the blackboard? They are written out on the next few pages, and you can work them.

For Your Notebook: Ask your father, mother, grocer, friend or other person what arithmetic problems he has to do. Bring the problems to class.

Problems to Keep the Trains on Time



Sue's father is the engineer on a fast train. When she asked him how he used arithmetic, he showed her his watch and taught her how to read it exactly. The watch has three hands, the hour hand, the minute hand, and the second hand.

1. How long does it take the second hand to move all the way around the small circle? Tell how long 1 second is by telling something you can do in about 1 second.

2. How long does it take the minute hand to move all the way around the big circle? Tell something you can do in about 1 minute.

3. How long does it take the hour hand to move all the way around the big circle? Tell something you can do in about 1 hour.

4. In the watch in the picture, the minute hand is at 3 and the hour hand is between 10 and 11. Sue's father said it is ten-fifteen. Explain what he meant. Sue's mother said it was 15 minutes past 10 o'clock, or a quarter past 10 o'clock. Was she right?

5. What time is it when the minute hand is at 8 and the hour hand is between 4 and 5?

60 seconds (sec.) = 1 minute (min.)
60 min. = 1 hour (hr.)
24 hr. = 1 day (da.)
7 da. = 1 week (wk.)

The Milkman's Problems

Regular Milk	12¢ qt.	Coffee Cream	25¢ pt.
Grade A Milk	16¢ qt.	Whipping Cream	40¢ pt.
Buttermilk	9¢ qt.	Butter	43¢ lb.
Chocolate Milk	15¢ qt.	Cottage Cheese	18¢ jar

Ida's father drives a milk truck. He uses his price list to find how much each one owes.

1. Mrs. Mason bought a quart of grade A milk, a quart of chocolate milk, and a pound of butter. How much did she owe? If she pays with a dollar bill, how much change should she receive?

2. Mrs. Hall bought a pint of whipping cream, a quart of buttermilk, and a jar of cottage cheese. How much did she owe?

3. Mrs. Taylor bought a pound of butter, a quart of regular milk, a pint of coffee cream, and a jar of cottage cheese. She gave the milkman a 5-dollar bill. How much change should he give her?

4. The restaurant man bought 8 quarts of regular milk and 3 pounds of butter. How much did he owe?

5. Mrs. McNutt bought 3 pounds of butter and gave the milkman $1. How much did she still owe?

6. Mrs. Norman bought 4 quarts of grade A milk and a pint of whipping cream. Did she owe more or less than $1? How much more or less?

7. Find how much your mother has to pay for each kind of milk named at the top of this page. Write her prices in your notebook.

Food and Figures

Daisy's mother keeps a lunchroom. These are some of the problems she has to do.

1. She bought 10 pounds of string beans for 45¢ and a peck of potatoes for 28¢. Find their cost. She paid for them with $1. How much change should she get?

2. At the bakery, she bought a large cake for 65¢, 3 dozen small cakes at 2¢ each, and 4 loaves of bread at 12¢ each. How much did the small cakes cost? How much did the bread cost? How much did it all cost?

3. She bought a 6-pound roast at 28¢ a pound and 65¢ worth of other meat. How much did it all cost? How much change would she get from $5?

4. One store sells pineapples at $1.98 a box and another store sells equally good pineapples at $1.75 a box. Daisy's mother wants 2 boxes. How much can she save by buying at the second store?

5. Mr. Bradford brought a party of 9 to the lunchroom. Lunches cost 55¢ each. How much did the 9 lunches cost? How much change would Mr. Bradford get from $10?

6. Daisy's mother serves regular breakfast for 25¢, regular lunch for 45¢, and regular dinner for 75¢. What would be the cost of meals for a week?

7. If she spent $53.22 for supplies and received $132.50 for meals, how much did she make?

Clothes and Figures

Ellen Vick's mother makes dresses. These are the kinds of problems she has to solve.

1. What is the cost of 7 yards of cloth at 27¢ a yard and 2 yards of lace at 18¢ a yard? How much change would she get back from $5?

2. The material for making a dress costs $3.80, and Mrs. Vick charges $2.50 for making it. What is the total cost of the dress?

3. Mrs. Vick bought 300 yards of tape. At the end of 2 weeks she had only 29 yards left. How many yards had she used?

4. Mrs. Tully made a payment of $5 on a dress that costs $17.50. How much did she still owe?

5. In making one dress, Mrs. Vick used 7 yards of material costing 89¢ a yard. She also used thread and buttons that cost 95¢. What was the total cost of the materials used to make the dress?

6. Mrs. Vick charges 75¢ to make an apron. How much should she charge to make 6 aprons?

7. Last month Mrs. Vick made 2 dozen children's dresses for a store to sell. The material cost her $10.80 in all. The store paid her 95¢ each for the dresses. How much did the store pay her for all the dresses? How much did she make on all the dresses?

The Livestock Dealer's Problems

Marjorie's father buys and sells livestock. In the problems he gave her, he would leave something out. She would have to put it in before she could work the problem.

When a fact is lacking in a problem below, try to find it at the bottom of the page. When a question is lacking, ask a question that makes the problem have meaning.

1. I paid 9¢ a pound for a large hog. How much did it cost?

2. I bought a pen of calves at $13 each. How much did they cost?

3. Last week I paid $125 for a brown horse. This week I bought a black horse to work with the brown one. How much did the two horses cost?

4. What is the weight of a pen of choice lambs?

5. Yesterday I bought 32 lambs at $8.20 each.

6. Today I bought 7 calves for $112.

7. I also bought a pen of pigs at $4 each.

8. The brown horse weighed 320 pounds more than the cow I bought the same day. How much did the cow weigh?

Facts to Use in Problems Above

Weights: horse, 1200 pounds; large hog, 600 pounds; choice lamb, 84 pounds.

Number of Animals in a Pen; lambs, 52; calves, 32; pigs, 64.

Costs: cow, $55; black horse, $145.

Salesman Teases Little Sister

Jenny's brother sells clothes in a men's store. To tease her, he put into the problems he gave her some facts that were not needed to find the answers. Jenny had to learn not to use these numbers.

1. A man bought a pair of number 10 shoes for \$5.85 and a pair of 36-inch shoestrings for 5¢. How much did they cost?

2. A man who weighed 190 pounds bought 4 shirts for \$7.20. What was the cost of 1 shirt?

3. What would have been the cost of 1 shirt if the man had weighed 200 pounds?

4. Mrs. Trigg bought 6 number 16 collars for Mr. Trigg and 6 number 14 collars for Jack. How many collars did she buy?

5. Mrs. Cull bought a 9-year-old size sailor suit for Harry, and she gave Jenny's brother \$10. How much change should she get if the suit cost \$2.65?

6. At a special sale handkerchiefs were 20¢ each or \$2 a dozen. Mr. Jones did not need a whole dozen, so he bought 3. How much did the handkerchiefs cost?

7. Mr. Cox bought a pair of $8\frac{1}{2}$ shoes for \$5.50 and 6 pairs of number 11 socks at 25¢ a pair. How much did the shoes and socks cost?

8. A man 5 feet 10 inches tall and weighing 165 pounds bought an overcoat for \$42.50, and a number $7\frac{1}{4}$ hat for \$5.25. How much did the overcoat and hat together cost?

Garden Arithmetic

Grace Bell's father is a gardener. These are the problems he gave to Grace.

1. I sold 480 quarts of cherries from 8 trees. Find the average number of quarts from a tree.

2. How many gallons of cherries did I sell in all? How many gallons from a tree?

3. I sold the cherries at 12¢ a quart. How much did all of them bring?

4. I paid 4¢ a quart to have raspberries picked, and sold them at 15¢ a quart. How much did it cost to have 120 quarts picked? For how much did I sell the 120 quarts?

5. I set out 6 rows of early tomato plants with 45 plants in a row. How many plants was this?

6. Last season I sold 80 bushels of tomatoes at $0.95 a bushel, and we used $5 worth of tomatoes. How much were all the tomatoes worth?

7. By using 75 pounds of plant food I raised 200 more pounds of cabbage. At 2¢ a pound, how much did the plant food cost? At 3¢ a pound, how much did the extra cabbage bring?

8. I sold $58 worth of string beans and $37 worth of potatoes. How much more did I get for the beans than for the potatoes? How much did I get for both?

Kitchen Arithmetic

1. Mrs. Bell canned 4 bushels of tomatoes.

If there were about 135 tomatoes to a bushel, how many tomatoes were there in all?

2. She canned 18 quarts from each bushel. How many quarts did she can in all?

3. The quart jars came packed with 2 dozen in a box. How many jars were there in one box? How many in 6 boxes?

4. Mrs. Bell paid $3.95 a bushel for peaches. Last year she paid only $1.80 a bushel. How much more does she pay for a bushel this year?

5. To make a sirup she uses 24 cups of water. If she uses only half as much sugar, how many cups of sugar will she put in the water?

6. She filled 12 quart jars with peaches today and 18 quart jars yesterday. On an average, how many quarts did she fill a day?

7. The peaches used in filling each quart jar cost about 21¢. Sugar, fuel, and jar rings added about 5¢ to the cost of each jar. What was the total cost of a quart of canned peaches?

8. At her roadside stand she sold the canned peaches at 45¢ a quart. How much did she make on each quart she sold?

9. It cost 9¢ a quart to make apple sauce. She made 15 quarts. How much did it all cost?

10. She sold apple sauce at 25¢ a quart. How much did she make on 5 quarts?

Buying Savings Stamps

The pupils of the Monroe School buy savings stamps. The orders for stamps from the various rooms are put together in this form:

Week beginning March 12

Room No.	Stamps 10¢	25¢	50¢	$1
1	5	3	3	
2	6	4	2	
3	5	5	3	1
4	2	7	4	
5	8	8	4	1
6	9	7	1	3
7	15	8	7	2
8	10	10	12	4

1. Room 1 ordered five 10-cent stamps, three 25-cent stamps, three 50-cent stamps, and no dollar stamps. What did Room 5 order? Room 8? Room 2? Room 4?

2. How many 10-cent stamps did all the rooms together order? How much would all these 10-cent stamps cost?

3. How many 25-cent stamps did all the rooms order? How much would all these 25-cent stamps cost?

4. How many 50-cent stamps did all the rooms order? How much would all these 50-cent stamps cost?

5. How many 1-dollar stamps did all the rooms order? How much would all these cost?

Two-Step Problems

There are four kinds of one-step problems: (a) those in which you add; (b) those in which you subtract; (c) those in which you multiply; and (d) those in which you divide.

There are 16 kinds of two-step problems. Let A stand for addition, S for subtraction, M for multiplication, and D for division. A two-step problem whose first step is addition and whose second step is subtraction is shown below as AS. The 16 kinds of two-step problems are shown below. Tell what the first step is and what the second step is for each one.

AS	AM	AD	SM	SD	MD	AA	MM
SA	MA	DA	MS	DS	DM	SS	DD

Tell what you need to do for the first step and what you need to do for the second step for each of these problems.

1. Virginia paid 5¢ for a pencil, 4¢ for an eraser, and 6¢ for a tablet. She gave the store man 25¢. How much change did she get back?

2. Earl had 95¢ in his bank. He took 15¢ out to buy a knife. The next day he sold the knife for 10¢ and put the money in his bank. How much did he have in the bank then?

3. George worked 2 hours on Monday, 3 hours on Tuesday, and 1 hour on Wednesday. If he was paid at the rate of 15¢ an hour, how much did he earn in all?

4. Johnny was sick. The class had 90¢ and voted to use $\frac{1}{2}$ of it to buy flowers for Johnny. The teacher gave 55¢, too. How much did they have to spend for flowers?

5. A peddler paid 3¢ each for fly swatters and sold them for 5¢ each. How much did he make in selling 24 fly swatters?

6. Grace bought 6 pencils at 5¢ each. How much change would she get back from 50¢?

7. Inez had 72 picture cards. She gave 12 of them to her sister and divided the others equally among 6 friends. How many cards did each friend get?

8. Jack and three other boys divided 60 marbles equally among themselves. How many more marbles will Jack need to get in order to have 24 in all?

9. Janet worked 6 hours at 30¢ an hour and used the money to buy 3 handkerchiefs for her mother. How much did each handkerchief cost?

10. If a man earns $3.60 a day and a boy earns only $\frac{1}{4}$ as much, how much can a boy earn in 5 days?

11. Ray earned $1.35 and Glen earned $0.50 more than Ray. How much did they both earn?

12. On Monday Frank had $3.35 and John had $2.70. On Tuesday, Frank spent $0.15, while John had spent nothing. How much more did Frank have then?

13. Janet raised 5 rows of daisies with 6 plants in a row and sold each plant for 15¢. How much did she get for all of them?

A Good Workout

Add. Check by adding in the opposite direction.

1.

8	26	43		67	
6	16	8	768	156	1,569
0	10	25	433	8	4,672
7	18	39	404	39	406
9	43	8	560	214	1,560

Subtract. Check by adding.

2.

56	74	81	348	543	4,110
7	65	27	264	95	2,406

Multiply. Check.

3.

28	63	87	453	809	560
9	30	45	8	60	78

Divide. Check.

4. $6\overline{)468}$ $7\overline{)1344}$ $9\overline{)7875}$ $8\overline{)7656}$

Copy neatly in straight columns and add.

5. 76, 54, 9, 63, 91 8, 15, 23, 47, 16

6. 328, 716, 201, 150 30, 116, 404, 950

Copy neatly and subtract.

7. 167 from 889 543 from 651

Find the products.

8. 16 times 87 49 times 93

If you make more than four mistakes on this page, do pages 177 and 178 again.

First Round-Up for Unit 8

Add. Check by adding in the opposite direction.

1.

		85	444	$3.95	87
76	$0.23	327	376	.75	46
39	1.18	9	8	.30	39
8	.76	45	43	2.45	5
34	.08	167	200	.90	53

Subtract. Check by adding.

2.

659	9834	406	$4.21	$11.16	14,532
167	3569	207	2.25	8.09	3,659

Multiply. Check.

3.

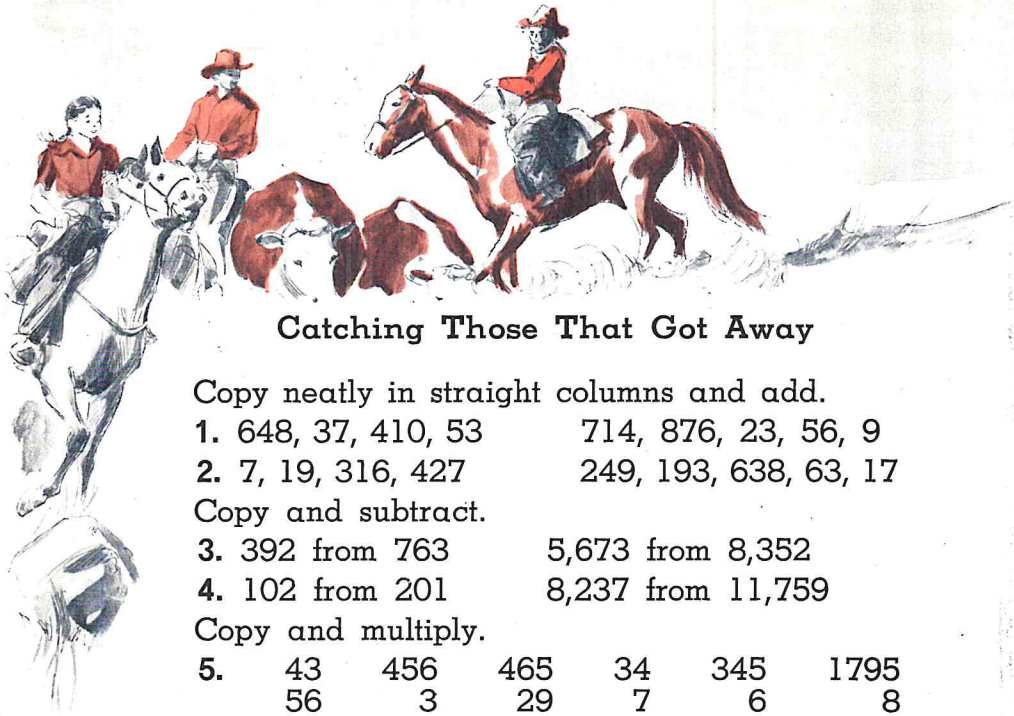
89	365	69	389	1378	4009
9	6	24	37	9	4

Divide. Check.

4. $8\overline{)512}$ $6\overline{)294}$ $4\overline{)148}$ $3\overline{)1062}$ $5\overline{)380}$

5. $9\overline{)3843}$ $7\overline{)868}$ $2\overline{)706}$ $3\overline{)1704}$ $9\overline{)2898}$

Those who made more than four mistakes will work on page 204. Others will work page 205.



Catching Those That Got Away

Copy neatly in straight columns and add.

1. 648, 37, 410, 53 714, 876, 23, 56, 9

2. 7, 19, 316, 427 249, 193, 638, 63, 17

Copy and subtract.

3. 392 from 763 5,673 from 8,352

4. 102 from 201 8,237 from 11,759

Copy and multiply.

5.

43	456	465	34	345	1795
56	3	29	7	6	8

Copy and divide.

6. $9\overline{)378}$ $8\overline{)506}$ $7\overline{)3724}$ $8\overline{)6664}$ $8\overline{)1486}$

7. Darlene had $12.50 in war savings stamps and then bought $1.25 worth. When she has $18.75 in stamps, she will exchange them for a bond. How many more stamps will she need to buy to have enough for the bond?

8. Find the cost of:

a. 4 boxes of crayons

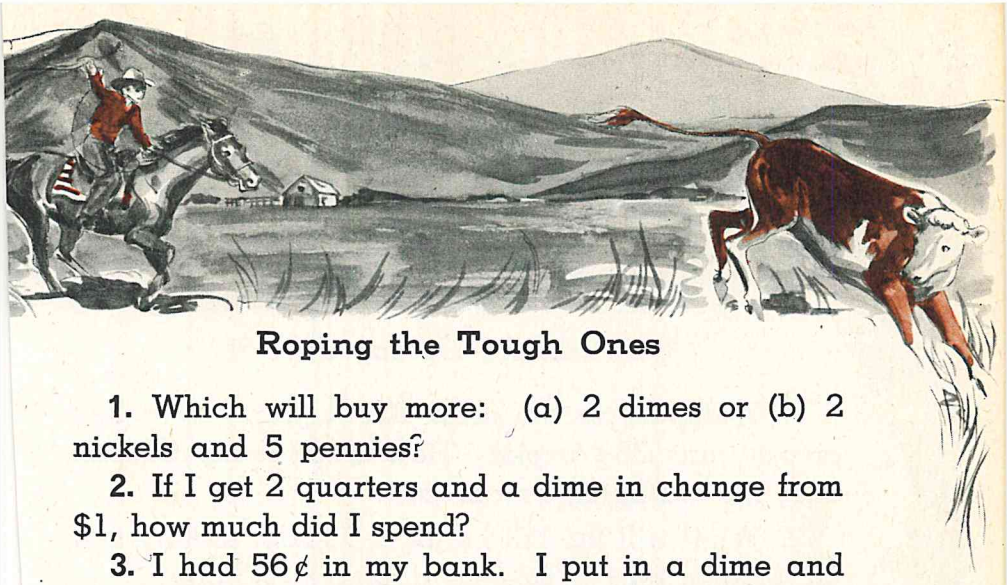
b. 6 paint sets

c. 8 tablets

d. 5 pencils and a tablet

e. 7 erasers

Clearance Sale	
Crayons	9¢ a box
Tablets	8¢ each
Paint Set	17¢ each
Pencils	6¢ each
Erasers	4¢ each



Roping the Tough Ones

1. Which will buy more: (a) 2 dimes or (b) 2 nickels and 5 pennies?

2. If I get 2 quarters and a dime in change from $1, how much did I spend?

3. I had 56¢ in my bank. I put in a dime and then a quarter. How much was in the bank then?

4. I had $14.27 in my bank. I put in a half dollar, 2 quarters, and a dime. How much was in my bank then?

5. If your mother bought a pair of shoes for $6.50 and two pairs of stockings at $1.25 a pair, how much did she spend?

6. Tom had $4.50. He bought a plane for $1.25 and a ball for $.98. How much did he have left?

7. Mary bought 5 books at $.59 each and a drawing book for $.35. How much was her bill?

8. Harry earned $1.25 Monday, $3.50 Tuesday, and $1.75 Wednesday. If he had already saved $14.65 before he worked, how much did he have in all after receiving his pay?

9. Father had $56.50 still to be paid on a washing machine which he bought. If he paid $25.80 today, how much does he still owe?

Last Round-Up for Unit 8

1. Whipping cream costs 40¢ a pint, and coffee cream costs 25¢ a pint. How much more per pint does the whipping cream cost?

2. What will the bill be for a 35-cent plate lunch for Mother and a 65-cent dinner for Father?

3. Find the cost of a lamb that weighs 86 pounds at 12¢ a pound.

4. Mr. Jackson bought a half dozen number 16 shirts at $2.25 each. How much did they cost?

5. Mr. Bell sold 283 pounds of early cabbage and 416 pounds of late cabbage. How much did he get for the early cabbage at 6¢ a pound? How much did he get for the late cabbage at 3¢ a pound? How much did he get for all the cabbage?

6. Mrs. Vick paid $4.83 for the materials for a dress and sold the dress when finished for $8.75. How much did she get for making the dress?

7. John had a 10-foot board, a 6-foot board, and an 8-foot board. What is their average length?

8. Robert paid 15¢ for a dozen tomato plants. From them he raised 120 pounds of tomatoes worth 3¢ a pound. How much did he make?

Multiplying by Longer Numbers

1. If there are 36 cans of peaches in a case, how many cans are there in 32 cases?

To multiply 36 by 32 multiply 36 by 2 and then by 3.
$2 \times 36 = 72$

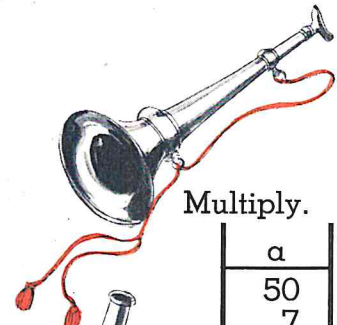
Because 3 is in tens place, you are really multiplying 36 by 30.
$30 \times 36 = 1080$

Write	Think
36	36
32	32
72	72= 2x36
108	1080=30x36
1152 product	1152=32x36

Then add 72 and 1080 together to find the product of 32×36. $32 \times 36 = 1152$

2. The grocer bought 75 cases of soda. There are 24 bottles in a case. How many bottles of soda did the grocer buy? Write its name after each number in the example.

3. There are 36 cans of peaches in a case. How many cans in 96 cases?



Playing Fireman

Multiply.

a	b	c	d
50 × 7	467 × 3	5538 × 9	28 × 87
63 × 9	139 × 7	2129 × 8	76 × 34
46 × 8	254 × 9	6805 × 6	47 × 46
69 × 8	598 × 5	9380 × 9	69 × 98
90 × 4	785 × 8	1392 × 7	59 × 85
46 × 6	493 × 7	3928 × 9	59 × 26
54 × 7	637 × 8	5463 × 6	83 × 38

Play that you are a fireman. See how quickly you can go to the top of a ladder to save a life.

There are four ladders to be climbed with seven persons on each ladder. Rest between ladders and try to save every life.

If you miss any steps in a ladder, turn back to pages 141, 142, and 145.

We Use the Number Twelve Often

The number 12 is used more than most numbers. There are 12 things in a dozen. There are 12 months in a year. There are 12 inches in a foot. There are 2×12, or 24, hours in a day and night. There are 12×12, or 144, things in a gross.

Twelve multiplication facts about the number 12 are given in the table below. Check each product by multiplying the numbers together.

$1 \times 12 = 12$	$5 \times 12 = 60$	$9 \times 12 = 108$
$2 \times 12 = 24$	$6 \times 12 = 72$	$10 \times 12 = 120$
$3 \times 12 = 36$	$7 \times 12 = 84$	$11 \times 12 = 132$
$4 \times 12 = 48$	$8 \times 12 = 96$	$12 \times 12 = 144$

1. Which of these foods are bought by the dozen: eggs; potatoes; oranges; apples; bananas; cabbage; cookies; rolls; pork chops?

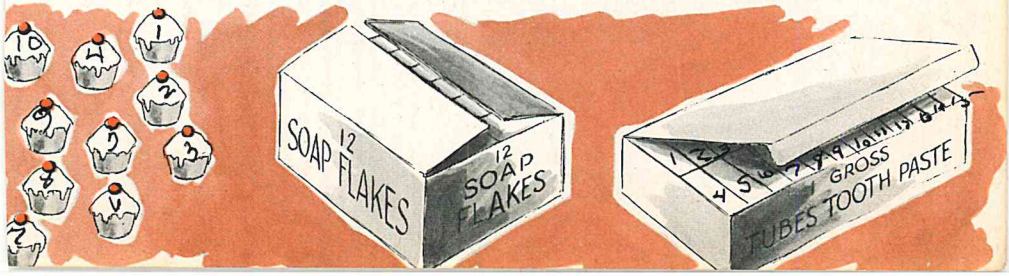
2. Name some other things that are bought by the dozen.

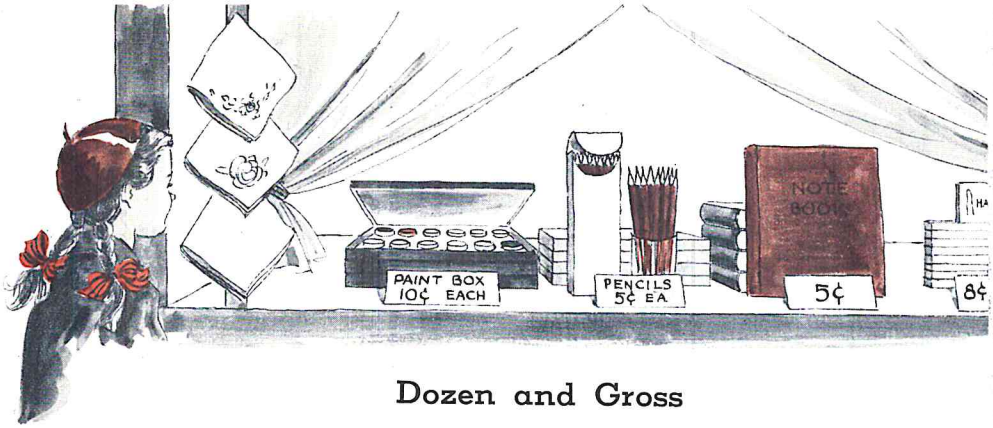
3. Stores often buy pencils, erasers, tubes of toothpaste, and other small articles by the gross. Do you know of anything that is bought by the gross?

4. How many oranges in 3 dozen? In 8 dozen? In 12 dozen?

5. Robert is 4 feet tall, and his father is 6 feet tall. How many inches tall is each?

6. Sam is 9 years old. How many months is this?





Dozen and Gross

These are some of the things Mr. Wise added to his stock last week.

3 gross pencils 2 gross hairpins
6 dozen notebooks 9 dozen boxes of paint

1. The pencils cost $2.95 a gross. How much did the 3 gross cost him?

2. He will sell the pencils at 5¢ each. For how much will he sell 3 gross of pencils?

3. How much will he make on the 3 gross of pencils? This is called his profit.

4. The notebooks cost 27¢ a dozen and Mr. Wise sells them at 5¢ each. What was the cost of the 6 dozen? For how much will he sell them? What will his profit be?

5. The hairpins cost $6 a gross, and Mr. Wise will sell them at 8¢ each. How much did Mr. Wise pay for the hairpins? For how much will he sell them? How much will his profit be?

6. The boxes of paint cost 70¢ a dozen. What did 9 dozen cost? Mr. Wise will sell them at 10¢ each. How much profit will he make on 9 dozen?

Using Tables of Measure

1. Claude is 8 years old. If he said that he is 96 months old, would he be right?

2. Helen is 5 years old. Show that she is 60 months old.

3. How many months old is one who is 10 years old? One who is 12 years old? One who is 15 years old?

4. How many months old is one who is 8 years and 3 months old? Explain the work shown at the right.

Work

12
x8
96
+3
99 months

5. How many months old is one who is 11 years and 5 months old? One who is 13 years and 2 months?

6. A man borrowed some money 4 years and 7 months ago. How many months has he owed this money?

7. Grandfather came to live at our house 6 years and 3 months ago. How many months has he lived at our house?

8. How many inches are in 7 feet? In 16 feet? In 44 feet?

9. A piece of cloth is 2 feet 5 inches long. How many inches long is the cloth?

10. A flagpole is 42 feet 6 inches high. How many inches is that?

11. A flag is 4 feet long and 3 feet wide. How many feet will Mother sew if she makes a hem all the way around the flag?

Multiplying by Hundreds

1. What is the rule for multiplying by 10? By 20? By 30? By 80? (See pages 137, 138.)

2. Study these multiplications and make up a good rule for multiplying a number by 100.

$100 \times 3 = 300$ $100 \times 6 = 600$ $100 \times 8 = 800$

3. Use the rule you made up to multiply each of these numbers by 100.

4 7 9 37 54 78 92 196

Study the multiplications below.

$2 \times 423 = 846$

$200 \times 423 = 84600$

$3 \times 715 = 2145$

$300 \times 715 = 214500$

$$\begin{array}{r} 423 \\ 200 \\ \hline 84600 \end{array} \qquad \begin{array}{r} 715 \\ 300 \\ \hline 214500 \end{array}$$

4. Make up a good rule for multiplying a number by 200; by 300; by 400; by 500; by 600; by 700; by 800; by 900.

Copy and multiply.

5.	714	285	241	954	752	645	918
	200	200	200	200	200	200	200
6.	786	541	437	864	947	629	865
	300	400	500	600	700	800	900
7.	748	485	379	417	593	648	651
	300	400	500	600	700	800	900

To multiply a number by 100, annex two 0's.

To multiply a number by 200, multiply by 2 and annex two 0's.

Three-Figure Multipliers

1. The Wheatco Mills sold 4 barrels of flour to one customer, 20 barrels to another customer, and 800 barrels to a third customer. A barrel of flour weighs 196 pounds. How many pounds of flour did the Wheatco Mills sell to the three customers?

4×196 pounds = 784 pounds, first customer
20×196 pounds = 3,920 pounds, second customer
800×196 pounds = 156,800 pounds, third customer
Total = 161,504 pounds

Here is a shorter way to multiply 196 by 824. You multiply as you did with 2-figure multipliers, except that here you have 3 figures in the multiplier.

Multiply	Think	Check
196	196	824
824	824	196
784	784— 4x196	4944
392	3920— 20x196	7416
1568	156800—800x196	824
161504	161504	161504

Multiply and check.

2.

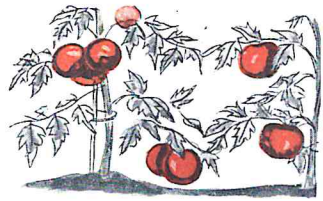
317	538	923	644	754	916	423
428	316	542	748	694	316	625

3.

634	261	421	714	538	914	537
431	287	353	168	954	232	764

Three-Figure Multipliers Ending in 0

1. Mr. Good ties his tomato plants to sticks. If he has 324 plants in a row, how many sticks will he need for 760 rows of plants?



Study the multiplication and the check at the right. Then copy the example and multiply with your book closed.

Multiply	*Check*
324	760
760	324
19440	3040
2268	1520
246240	2280
	246240

2. There are 210 rows of apple trees in Mr. Good's orchard, with 286 trees in a row. How many trees are there altogether? Check your answer.

3. The road in front of Mr. Good's home and yard is paved with brick. There are 180 rows of brick with 990 bricks to a row. How many bricks are there in all?

Multiply and check.

4.	760	434	851	376	540	711	816
	354	160	750	840	449	520	340
5.	379	280	682	530	385	953	720
	450	934	750	692	690	630	436

Watch the 0 in the Multiplier

1. Multiply 457 by 209. Check.

Long Way	Short Way	Check
457	457	209
209	209	457
4113	4113	1463
000	9140	1045
914	95513	836
95513		95513

Look carefully and then tell exactly how the short way is different from the long way.

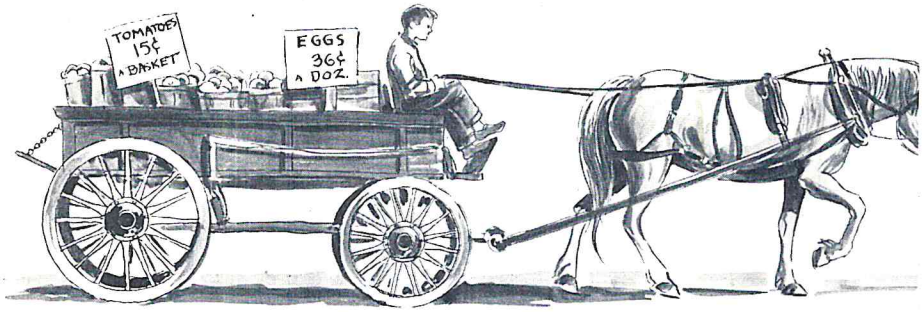
Copy exercise 1 above. Then close your book and multiply the short way.

Multiply the short way. Check.

2.	937	468	476	398	517	463	540
	301	206	409	506	804	702	305
3.	628	732	564	840	706	510	904
	407	209	303	205	104	608	503

4. The fourth grade pupils made 108 strings of popcorn for a party. If there were 360 grains on a string, how many grains of popcorn were there?

5. There are 307 workmen on a lake boat. If the average weight of the workmen is 168 pounds, what is the total weight on the boat?



Multiplying Dollars and Cents

1. Jerry sold 43 baskets of tomatoes at 15¢ a basket. How much did he get for all his tomatoes?

$$\begin{array}{r} \$0.15 \\ 43 \\ \hline 45 \\ 60 \\ \hline \$6.45 \end{array}$$

Write 15¢ as \$0.15, and multiply by 43. The answer is \$6.45. You have to write a dollar sign before the 6 and a cents point between 6 and 4.

2. Jerry also sold 37 dozen eggs at 36¢ a dozen. How much did he get for his eggs? (How will you write 36¢ before multiplying?)

3. Jerry is paid 75¢ each day that he works. How much did he earn last month if he worked 25 days?

4. How much can he save in a year if he saves \$1.75 a week? There are 52 weeks in a year.

Copy and multiply. Be sure to write the dollar sign and the cents point correctly in the answer.

5.

\$0.09	\$1.24	\$3.15	\$7.43	\$5.25	\$0.83
62	36	48	52	64	26

6.

\$6.05	\$3.25	\$6.20	\$15.48	\$46.45	\$18.00
24	49	37	76	94	87

Multiplication Practice

Here is how to play "Odds and Evens." Choose a partner. Decide which will work the odd exercises and which will work the even ones. When the first of the pair finishes, exchange papers and check.

It would be well then to have all the exercises put on the blackboard and have each one double check his own paper.

1. Multiply by 7:	186	239	7548	6094
2. Multiply by 9:	248	605	9837	1860
3. Multiply by 85:	637	498	1620	5968
4. Multiply by 64:	820	197	3654	9218
5. Multiply by 318:	265	938	4087	6254
6. Multiply by 927:	243	856	3548	2973
7. Multiply by 760:	350	602	8064	9408
8. Multiply by 307:	460	705	9860	3047
9. Multiply by 8:	$0.25	$0.64	$7.15	$12.66
10. Multiply by 6:	$0.08	$0.75	$9.04	$25.24

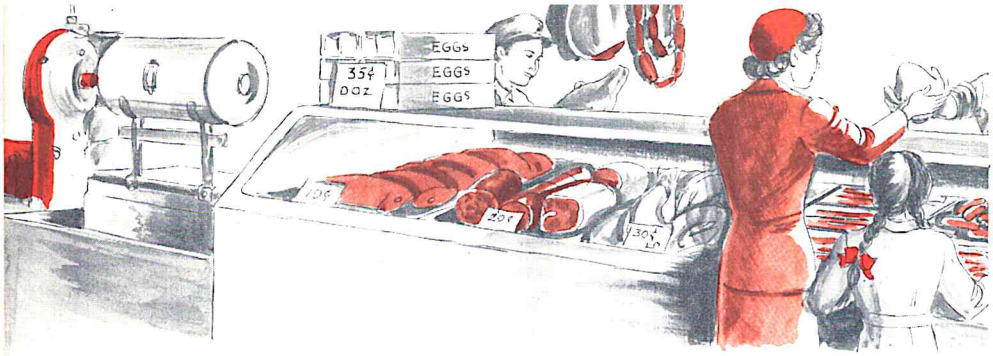
11. What is the cost of 24 handkerchiefs at 49¢ each?

12. What is the cost of a dozen oranges at 3¢ each?

13. Find the cost of 3 dozen pens at 5¢ each.

14. How much can Jack earn in 310 days at $4.25 a day?

For Your Notebook: Have your father or mother help you make up three problems about things in your home. Have the pupils try to work them.



The Cut-Rate Meat Market

Our Motto: Good meats for less.

Tender Steak	2 lb. for 49¢
Calf's Liver	19¢ a lb.
Boneless Beef Shoulder	32¢ a lb.
Tender Rump Roast	22¢ a lb.
Baby Beef Round Steaks	35¢ a lb.
Short Ribs of Beef	2 lb. for 35¢
Smoked Beef Tongues	22¢ a lb.
Beef Brains	2 sets for 25¢
Veal Steaks	47¢ a lb.
Link Pork Sausage	29¢ a lb.
Pork Chops	40¢ a lb.
Cold Meats	29¢ a lb.
Fresh Dressed Spring Chickens	30¢ a lb.
Skinned Jack Salmon	19¢ a lb.
Fresh Eggs	35¢ a doz.
Bacon	28¢ a lb.

Virginia Clark's mother has 6 boarders who eat breakfast and dinner at the house. Mrs. Clark sends their lunch to them. Virginia helps her mother shop for meat.

Virginia and Mrs. Clark Go Shopping

This is the meat Mrs. Clark bought for one week. Find the cost of meat and eggs for each day.

Monday:

3 lb. of liver; 2 lb. of bacon; 8 lb. of tender steak; 1 lb. of pork chops

Tuesday:

2 doz. eggs; 6 lb. of round steak; 3 lb. of cold meats

Wednesday:

2 doz. eggs; 8 sets of beef brains; 6 lb. of smoked tongue; 1 lb. of pork chops

Thursday:

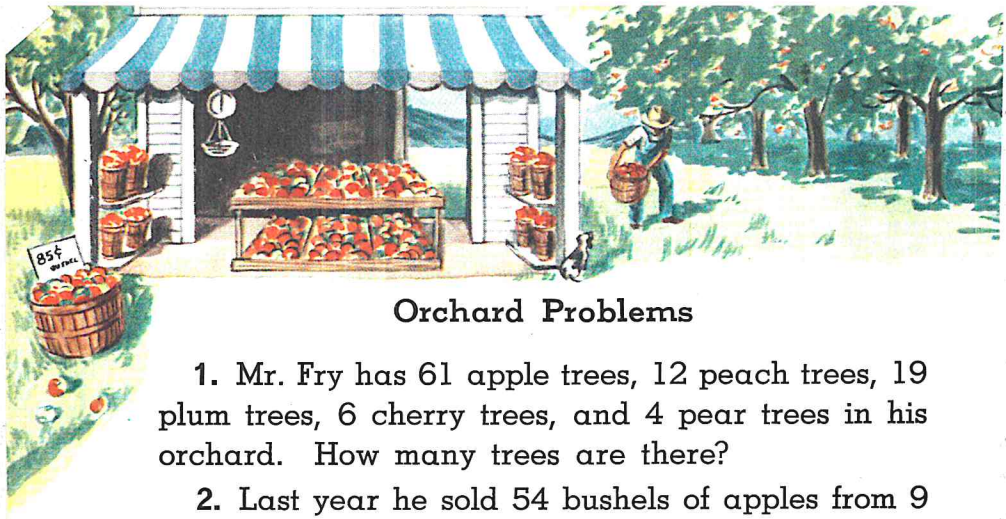
6 lb. of boneless beef shoulder; 4 lb. of link pork sausage; 4 lb. of cold meats

Friday:

10 lb. of jack salmon; 3 dozen eggs; 2 lb. of veal steaks; 1 lb. of pork chops

Saturday:

9 lb. of fresh dressed spring chickens; 6 lb. of tender rump roast; 3 lb. of bacon; 4 dozen eggs; 4 lb. of cold meats; 2 lb. of link sausage; 6 sets of beef brains



Orchard Problems

1. Mr. Fry has 61 apple trees, 12 peach trees, 19 plum trees, 6 cherry trees, and 4 pear trees in his orchard. How many trees are there?

2. Last year he sold 54 bushels of apples from 9 early trees. What was the average number of bushels per tree?

3. He has 8 summer apple trees. His family used about 12 bushels of summer apples, and he sold 52 bushels. How many bushels of summer apples did he have? What was the average number of bushels per tree?

4. The 44 fall and winter apple trees averaged 11 bushels to the tree. How many bushels was this?

5. He sold his early apples at $1.25 a bushel. How much did he get for them?

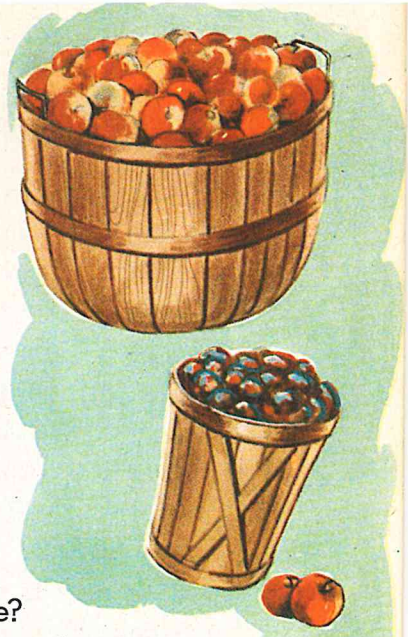
6. He sold his summer apples at 85¢ a bushel. How much did he get for them? At the same rate, what was the cost of the summer apples his family used?

Table of Dry Measure

2 pints (pt.) = 1 quart (qt.)
8 quarts (qt.) = 1 peck (pk.)
4 pecks (pk.) = 1 bushel (bu.)

7. Mr. Fry's plum trees bore an average of 3 pecks to the tree. He sold these at 50¢ a peck. How much did he get for them altogether?

8. The peach trees bore an average of 2 bushels to the tree. Mr. Fry's family used 3 bushels of peaches, and he sold the rest at $1.75 a bushel. How much did he get for what he sold? How much were the peaches the family used worth at the same rate?



9. Mr. Fry picked 2 pecks of sweet cherries from each of 3 trees, and 1 peck of sour cherries from each of the other cherry trees. How many pecks of cherries did he have in all?

10. He sold the sweet cherries at 15¢ a quart. How much did they bring?

11. He sold the sour cherries at 9¢ a quart. How much did they bring?

12. There were 138 apples on one tree and 126 on the other. How much were these worth at 3¢ each?

13. One year Mrs. Fry planted 125 grape vines. The next year she planted twice as many. How many vines did she then have?

14. When the grapes were ripe she gathered 15 pounds in one basket and four times as much in another. How many pounds did she gather in all?

Pages for Your Notebook

Copy these tables of measure in your notebook.
Table of Counting Things (page 80 in arithmetic)
Table of Liquid Measure (page 81)
Table of Distance Measure (page 79)
Table of Time Measure (page 191)
Table of Dry Measure (page 220)

Table of Weight Measure

16 ounces (oz.) = 1 pound (lb.)

Write each of these abbreviations in a column in your notebook. After each abbreviation write the word or words for which it stands. For example, bu. stands for bushel or bushels.

bu.	doz.	lb.	oz.	pt.	sec.
da.	gal.	min.	pk.	qt.	wk.

Say or write the number that belongs in place of each ? . You may refer to your notebook.

1. $\frac{1}{2}$ hr. = ? min.
2. 60 min. = ? hr.
3. 1 gross = ? doz.
4. 1 bu. = ? pk.
5. 1 pk. = ? qt.
6. 42 da. = ? wk.
7. 2 wk. = ? da.
8. 1 gal. = ? qt.
9. 2 pt. = ? qt.
10. 72 qt. = ? gal.
11. $\frac{1}{2}$ min. = ? sec.
12. $\frac{1}{4}$ hr. = ? min.
13. 4 pk. = ? bu.
14. 1 qt. = ? pt.

Something for the Class to Think About

Apples, potatoes, and other things may be weighed as well as measured in bushels and pecks. Do you think we could get along about as well if we did not use dry measure at all?

Try to Beat the Clock

Watch the clock and find how long it takes you to get all the answers. Check with the blackboard to see if your answers are right.

Test A — Time: 15 minutes

1. 713 + 472 + 86 + 903 + 49

2. 684 + 91 + 305 + 92 + 87

3. 1743 − 906

4. 9701 − 4833

5. $8\overline{)7296}$

6. $7\overline{)3647}$

7. 7687×8

8. 93×26

9. 850×427

10. 674×305

11. Mrs. Kelly bought 8 dozen oranges at 46¢ a dozen and gave the clerk $5. How much change should the clerk give to her?

Test B — Time: 14 minutes

1. 397 + 76 + 551 + 603 + 36

2. 833 + 26 + 301 + 47 + 16

3. 1397 − 608

4. 4805 − 2916

5. $9\overline{)6489}$

6. $6\overline{)5472}$

7. 8309×7

8. 89×34

9. 630×947

10. 746×402

Keeping Accounts

The Gregg family keep an account of what they spend each month. Here is a page from their account book.

Account Book		*August*	
Rent	*$42.50*	*Clothing*	*$87.32*
Groceries	*63.25*	*Car Fare*	*4.35*
Gas	*2.14*	*Medical*	*4.67*
Electricity	*3.98*	*Other Things*	*6.90*

1. How much was spent altogether in August?

Hint: One way to find the answer is to copy all the numbers in a column and find the sum. Another way is to hold your paper under the first column above and add, next hold the paper under the second column above and add, and then add the two sums you have just found.

2. How much rent does the Gregg family pay in a year?

3. If they moved into a house which rented for $37.50 a month, how much would they save each month? How much would they save in a year?

4. If their gas bill were only $\frac{1}{2}$ as much, what would their gas bill be for a month?

5. If their bill for electricity averages $3.98 a month, what will it be for a year?

6. How much more did they spend for clothing than for groceries during August?

7. There are 4 in the Gregg family, the father and mother, one child, Marjorie, in third grade and one child, John, in fifth grade. Ask your mother how she thinks the money they spend for groceries should be divided. How much for milk and butter? How much for meat and eggs? How much for fruit and vegetables? How much for other groceries?

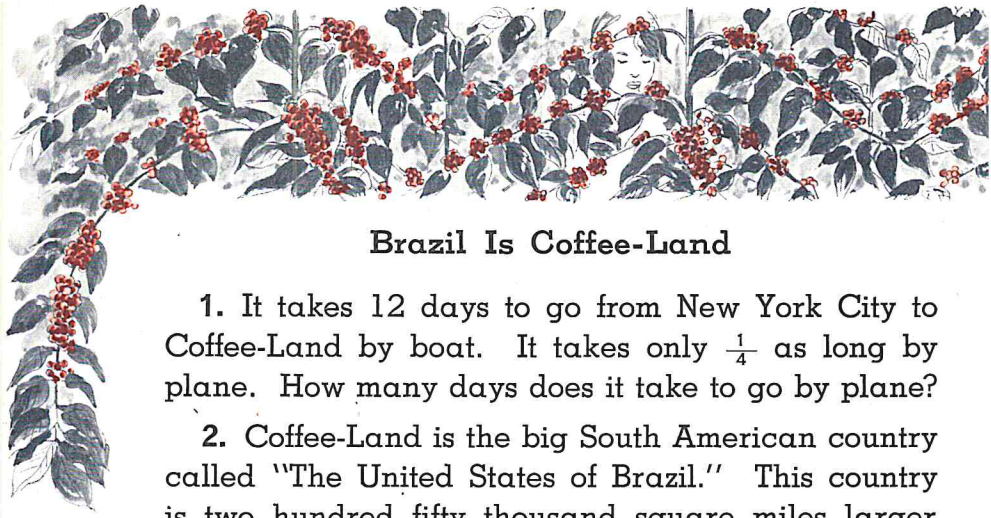
8. The Greggs allow $300 a year for clothing for the whole family. After spending what they did for August, how much do they have for the rest of the year? Why do you think they might spend more in August than in other months?

9. Ask your mother how she thinks the clothing money they have for a year should be divided. How much for Mr. Gregg? How much for Mrs. Gregg? How much for Marjorie? How much for John?

10. The Gregg family allows $150 a year for doctors, dentists, and medicine. Mrs. Gregg said that was an average of $12.50 a month. Was she right?

11. If Mr. Gregg earns $250 a month and the family spends an average of $220 a month, how much do they have left for insurance, for savings, or a vacation?

12. How much does Mr. Gregg earn in a year? How much does the family spend in a year?



Brazil Is Coffee-Land

1. It takes 12 days to go from New York City to Coffee-Land by boat. It takes only $\frac{1}{4}$ as long by plane. How many days does it take to go by plane?

2. Coffee-Land is the big South American country called "The United States of Brazil." This country is two hundred fifty thousand square miles larger than the United States of America where you live. Write this number of square miles in figures.

3. Wild coffee trees are about 20 feet high. Would it be easy to reach to the top of a wild coffee tree?

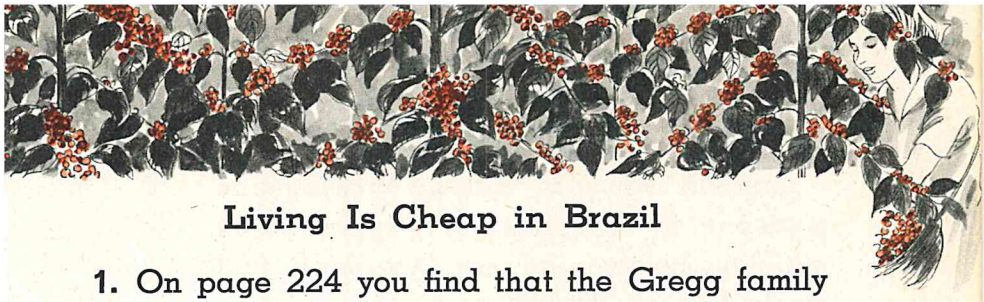
4. Paulo's father raised some coffee trees that are only 7 feet high. How much shorter than the wild trees are the ones he raised?

5. Why does Paulo's father like to have his coffee trees only 7 ft. tall? Measure 7 feet on the wall. Can you reach 7 feet high?

6. About 4 lb. of coffee are picked from one tree. How many pounds can Paulo expect to pick from 45 trees?

7. If coffee is put in bags holding 132 lb. each, how many pounds will 275 bags hold? 550 bags?

8. A ship coming to the United States is carrying 890 sacks of coffee. How many pounds is this?



Living Is Cheap in Brazil

1. On page 224 you find that the Gregg family pay $42.50 a month rent. In a large city in Brazil they would have to pay only $8.35 a month to rent a house. How much less would that be in a month? How much would they save on their rent in a year?

2. Meat can be bought in Brazil for 5¢ a pound. How much would you pay for a roast weighing 9 lb.?

3. In Brazil milk sells for 3¢ a quart. What would you have to pay for a gallon of milk?

4. Mrs. Porto lives in Brazil. She bought a loaf of bread for 1¢, a quart of milk for 3¢, and 50¢ worth of meat. How much did she spend in all?

5. Mr. Gregg earns $250 a month. Mr. Porto earns $48 a month. How much more does Mr. Gregg earn in a month? In a year?

6. Mrs. Porto paid $5.50 for a new dress. Mrs. Gregg paid $14.95 for her new dress. How much more did Mrs. Gregg have to pay?

7. The Porto family ate at one of the best restaurants. If Mr. Porto had to pay $.45 each for the meals, what was his bill for 4 in the Porto family?

8. The Gregg family went to a restaurant to eat. Each meal cost $1.10. If there are 4 persons in the Gregg family, how much did Mr. Gregg pay?

A Game: What Must I Do?

Pretend you are lost in Problemland. Choose someone in the class to be your guide. Read a problem below, and ask the guide, "What must I do to find my way?"

The guide will tell you what to do. If he fails to tell the way, the class will choose a new guide.

Some facts needed in a problem may not be given. The guide must also tell what the missing facts are.

1. There are nine hundred fifty goblins sleeping on every hill. What must I do to find how many goblins there are in all?

2. One-half the goblins are friendly. What must I do to find how many are my friends?

3. "The Old Witch has been gone 6 weeks," a friendly goblin said. What must I do to find how many days she has been gone?

4. The sign says, "Run 25 miles and walk 23 miles." What must I do to find how far that is?

5. "I eat 6 crackers a day from the bag I carry," another goblin said. What must I do to find how long the crackers will last?

6. The Old Witch flew from Somewhere to Nowhere at 200 miles a minute. What must I do to find how far it is from Somewhere to Nowhere?

7. When I woke up, I found I had been reading on page 124 of my story book when I fell asleep. How many more pages do I still have to read?

First Round-Up for Unit 9

Write the answers only.

1. Multiply by 6.	7	4	8	6	5	9
2. Multiply by 8.	2	9	6	8	7	3
3. Multiply by 7 and add 3.	9	6	5	8	4	7
4. Multiply by 9 and add 5.	2	0	7	9	6	8

Copy and multiply. Check.

5.	7	5	6	7	9	6	9	9
	8	9	4	7	8	7	9	7
6.	84	72	80	64	93	60	75	63
	4	3	2	5	6	9	8	7
7.	84	67	48	90	58	80	73	51
	30	21	42	63	70	90	27	49

Copy and multiply. Check.

8.	386	507	780	400	914	339
	4	6	9	8	5	7
9.	763	845	706	980	435	900
	20	32	43	26	24	65

Catching Those That Got Away

Pupils who missed more than 4 on page 229 will do this page. When you are sure you can answer "Yes" to each question below, try page 229 again.

1. Do you know the 100 multiplication facts? To test yourself, multiply the numbers of row A in turn by each number of row B. Begin "Four 7's are 28, four 4's are 16, . . . "

A.	7	4	6	2	1	0	9	5	8	3
B.	4	8	1	7	2	6	9	3	5	0

2. Do you know the times-and facts? To test yourself, multiply the numbers of row A in turn by 6 and add 4 to each product. Then multiply the numbers of row B in turn by 9 and add 7 to each product.

3. Do you know how to carry in multiplication? Copy these numbers and find the products.

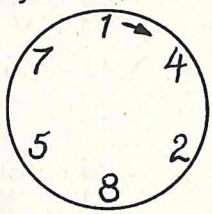
Multiply by 7: 23 347 4872 39605

Copy and multiply. Check.

4.	734	417	672	574	362	762
	20	43	300	520	406	328
5.	694	593	847	689	597	685
	30	64	500	350	309	983

Roping the Tough Ones

You will know when these products are right because they are curious products. When you finish the multiplications in 1, something will tell you whether or not you have the right answers. They may not be really useful, but they are fun to do.



1. The figures 1, 4, 2, 8, 5, and 7 are written in that order around the circle. Multiply 142857 in turn by 2, 3, 4, 5, and 6. In what way are all the products like the number you multiplied? How are the products like each other? Look carefully.

2. Multiply this big number, 588,235,294,117,647 in turn by 2, 3, 4, and so on. In what way are all the products like the number you multiplied? How are the products like each other?

3. Multiply 76923 in turn by 3, 4, 9, 10, and 12. How are the products like the number you multiplied? How are the products like each other?

4. Multiply 76923 in turn by 2, 5, 6, 7, 8, and 11. How are the products like each other? Are the products at all like the number you multiplied?

Last Round-Up for Unit 9

Copy and multiply. Check.

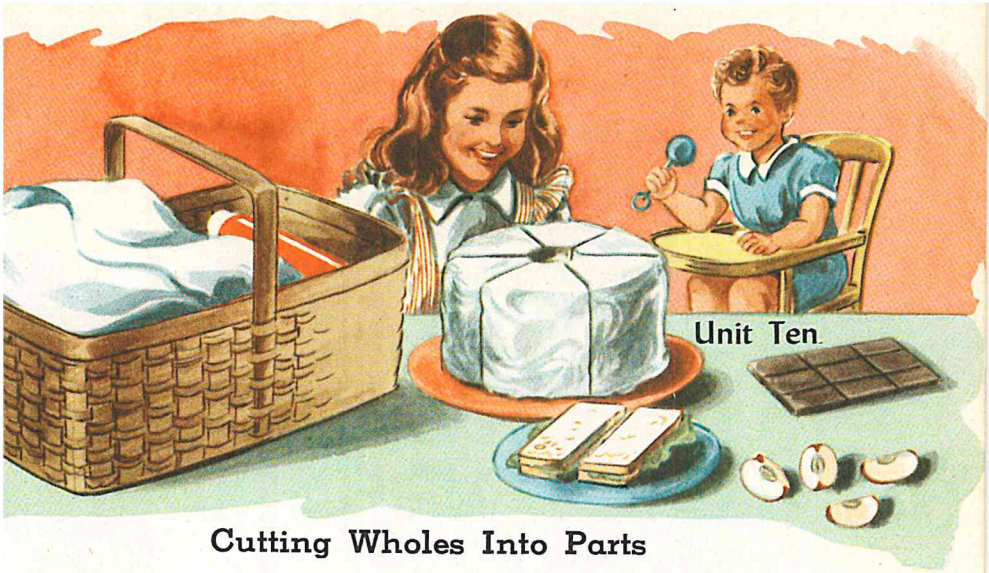
1.	32	48	247	935	2864	5073
	× 3	× 5	× 7	× 6	× 8	× 4
2.	54	91	373	496	2593	8064
	× 30	× 20	× 40	× 60	× 90	× 70
3.	41	67	264	385	4762	6901
	× 23	× 41	× 62	× 74	× 16	× 24
4.	95	80	624	710	6086	7842
	× 24	× 35	× 200	× 400	× 500	× 600

5. Mr. Taylor is a railroad engineer. He made 305 trips last year. Each trip was 426 miles long. How many miles did he go in all?

6. Harold has an allowance of $1.75 a week for carfare and lunches. How much is this for a year? (There are 52 weeks in a year.)

7. Jack earns $90 a month, and Joe earns $20 a week. Which earns more in a year? How much more?

8. If pupils use an average of 676 sheets of paper a year, how many will 48 pupils use?



Cutting Wholes Into Parts

The children are ready for their picnic. Here is some of their food.

Betty has cut her sandwich into two equal parts. When anything is cut into two equal parts, each of the parts is one-half of the whole.

One half is written in figures as $\frac{1}{2}$.

Baby John's apple has been cut into four equal parts.

When anything is cut into four equal parts, each of the parts is one-fourth of the whole.

One fourth is written in figures as $\frac{1}{4}$.

See how Mother has cut the angel cake. There are six equal pieces. What would you call each of the parts? How would you write it?

Baby John said he was hungry. Mother gave him one square of the chocolate bar. What part of the chocolate bar did Mother give him? How would you write the part in figures?

Parts of Wholes or Fractions

1. Find something on this page divided into thirds. Write one third in figures.

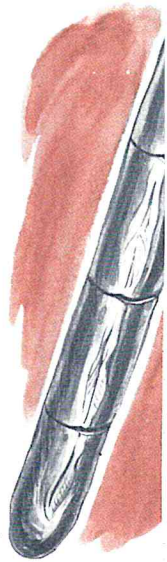
2. Find something that has been divided into halves. Write one half in figures.

3. Find something that has been divided into fourths. Write one fourth in figures.

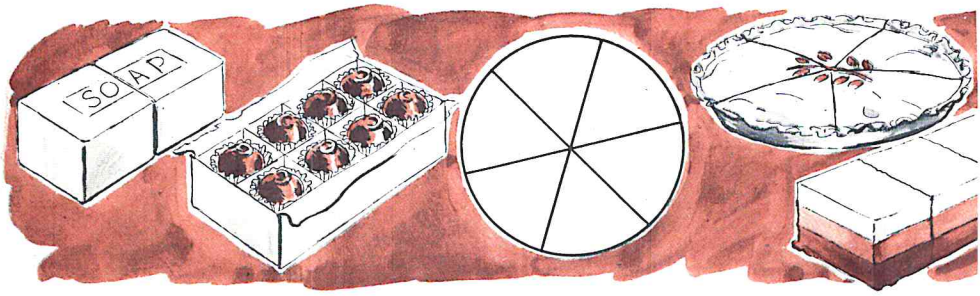
4. Find something that has been divided into fifths. Write one fifth in figures.

5. Find something that has been divided into sixths. Write one sixth in figures.

6. Find something that has been divided into eighths. Write one eighth in figures.



When you divide a whole into equal parts, the parts are called fractions, or equal parts of the whole. The numbers $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, *and so on are fractions.*



Draw some squares and circles in your notebooks. Divide and color them to show $\frac{1}{2}$; to show $\frac{1}{3}$; to show $\frac{1}{4}$; to show $\frac{1}{5}$; to show $\frac{1}{6}$; to show $\frac{1}{8}$.

More About Fractions

1. Ann broke her candy stick into two equal pieces and gave one piece to her brother. What part did she give to her brother? Draw a picture to show the part she kept and the part she gave to her brother.

2. Albert sawed a board into three equal pieces. If he gave one of the pieces to Tom, what part of the board did he give to Tom? Draw a picture to show how the board was divided.

3. Mother cut a big cake into 8 equal pieces. Mary ate one piece. What part did Mary eat?

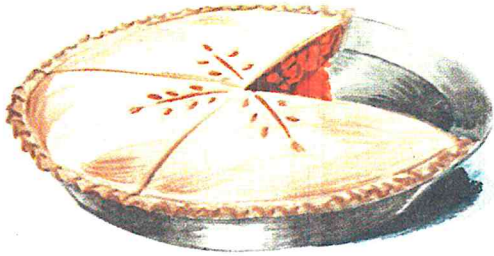
4. Read these fractions: $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{6}$, $\frac{1}{8}$, $\frac{1}{2}$, $\frac{1}{5}$. Notice that each fraction is made up of two numbers, one above the line and one below the line. How do you use these numbers in reading a fraction?

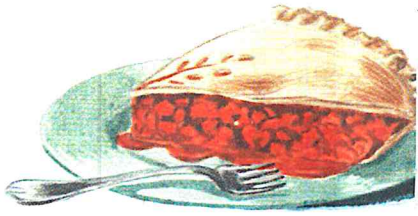
5. In $\frac{1}{3}$, the 3 tells us the whole has been cut into 3 equal parts, and the 1 tells us that 1 part is taken. Think now of $\frac{1}{4}$. Into how many parts was the whole divided? How many of these parts were taken?

6. Think of $\frac{1}{6}$ of a rope. Into how many equal parts was the rope divided? How many parts were taken?

7. Think of $\frac{1}{8}$ of a melon. Into how many equal parts was the melon divided? How many parts were taken?

8. I ate $\frac{1}{4}$ of a pie. Into how many parts was the pie divided? What number tells you so? How many of these parts did I eat? What number tells you so?





Fractions Showing More Than One Part

1. This pie was cut into four equal pieces. George put one of the pieces on a plate and left three pieces in the pie pan.

What part of the pie did George put on a plate?

George left three-fourths, or $\frac{3}{4}$, of the pie in the pie pan. In $\frac{3}{4}$, the number below the line tells into how many equal parts the pie was divided. The number above the line tells how many of these parts are considered.

2. Lulu cut a cake into 8 equal pieces. She gave 3 of the pieces away. What part did she give away?

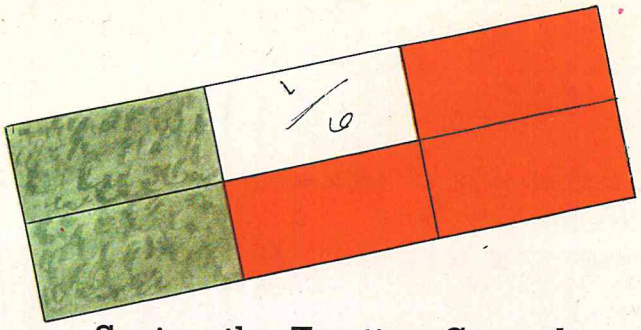
The answer is $\frac{3}{8}$. The number below the line tells that the cake had been divided into 8 equal pieces. The number above the line tells that 3 of these pieces were given away.

3. Lulu put in the cake box the 5 pieces she had left. What part of the cake did she put in the cake box?

The answer is $\frac{5}{8}$. What does the number below the line tell you? The number above the line?

4. Read these fractions: $\frac{3}{4}$, $\frac{2}{3}$, $\frac{2}{5}$, $\frac{5}{8}$, $\frac{3}{5}$, and $\frac{7}{8}$.

5. Write in figures: three-fourths, three-fifths, two-thirds, five-sixths, five-eighths, two-fifths.



Saying the Fraction Correctly

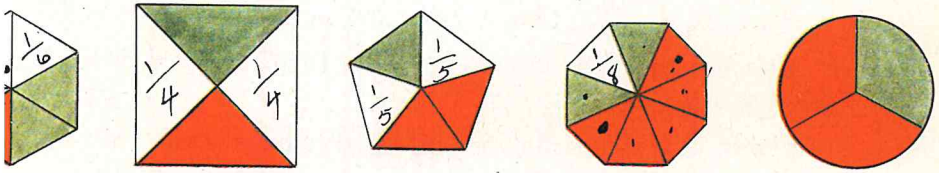
1. Here is Ted's plan for a vegetable garden. He has marked it off and colored it to show where he will plant different seeds. He will plant peas in the green sections, radishes in the red sections, and turnips in the white sections.

What part will he plant in peas?

What part will he plant in radishes?

What part will he plant in turnips?

2. Look at the pictures below. Tell what part of each is colored green. What part is red? White?

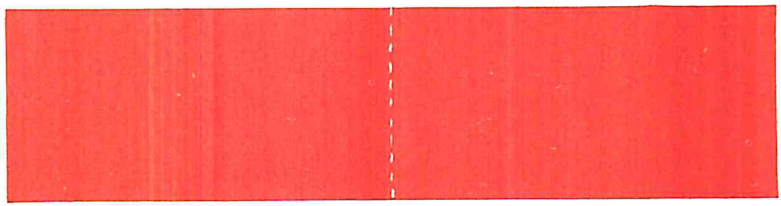


3. Bill cut away $\frac{1}{4}$ of his sheet of colored paper. Draw a sheet of paper and color the part that is left.

4. Harry's lawn is in the shape of a square. He has cut the grass on $\frac{1}{3}$ of it. Draw and color a picture showing the part that has been cut and the part that has not been cut. What part has not been cut? Write the fraction two thirds in figures.

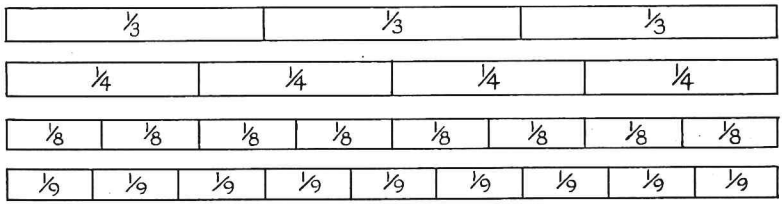
Equal Parts in a Whole

If I fold a strip of colored paper into halves, it will look like this.



There are 2 halves, or $\frac{2}{2}$, in the whole strip.

Look at these strips of paper. Each stands for a whole, and each has been divided into a different number of parts.



Use the pictures above to show that each of these statements is true.

There are 3 thirds, or $\frac{3}{3}$, in a whole strip.

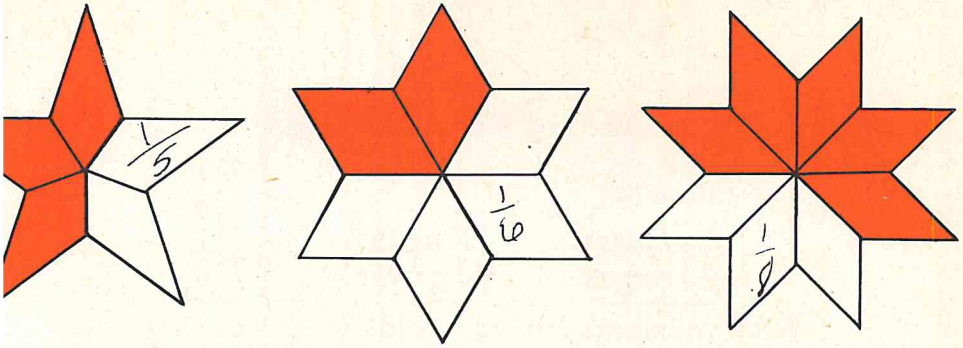
There are 4 fourths, or $\frac{4}{4}$, in a whole strip.

There are 8 eighths, or $\frac{8}{8}$, in a whole strip.

There are 9 ninths, or $\frac{9}{9}$, in a whole strip.

Tell what number to write in place of ? to make each amount below equal to 1 whole.

? fourths	? eighths	? sevenths
? halves	? ninths	? thirds
? sixths	? fifths	? tenths



Look at these stars. Each stands for a whole and each has been divided into a different number of parts.

Say for each star what part is colored and what part is white.

Read each of these fractions: $\frac{2}{2}$, $\frac{3}{3}$, $\frac{4}{4}$, $\frac{5}{5}$, $\frac{6}{6}$, $\frac{7}{7}$, $\frac{8}{8}$, and $\frac{9}{9}$. Is each of these fractions equal to 1 whole?

When both numbers of a fraction are the same, the fraction equals a whole or one.

1 apple	1 fifth	$\frac{1}{5}$
+2 apples	+2 fifths	$+\frac{2}{5}$
3 apples	3 fifths	$\frac{3}{5}$

When you add the fractions $\frac{1}{5}$ and $\frac{2}{5}$, you add the numbers above the line 1 and 2 to make 3. You did not add the 5's. Fifths is just the name of the part, as apples is the name of the things added. *The name of the sum is the same as the name of the things added.*

Adding Easy Fractions

Say the sums:

5 oranges	5 ninths	$\frac{5}{9}$
+2 oranges	+2 ninths	$+\frac{2}{9}$

What numbers do you add when you find the sum of $\frac{5}{9}$ and $\frac{2}{9}$? What number stays the same?

Find the sum of $\frac{1}{9}$ and $\frac{4}{9}$. What numbers do you add? What number stays the same? The name of $\frac{1}{9}$ is ninth. What is the name of $\frac{4}{9}$? What is the name of the sum?

To find the sum of fractions having the same name, add the numbers above the line because they tell the number of parts to be added. The number below the line stays the same because it is the name of the parts to be added.

Add these fractions.

1.

$\frac{1}{4}$	$\frac{2}{5}$	$\frac{1}{8}$	$\frac{3}{6}$	$\frac{2}{9}$	$\frac{1}{3}$	$\frac{2}{8}$	$\frac{5}{9}$	$\frac{1}{6}$
$\frac{2}{4}$	$\frac{2}{5}$	$\frac{4}{8}$	$\frac{2}{6}$	$\frac{2}{9}$	$\frac{1}{3}$	$\frac{1}{8}$	$\frac{2}{9}$	$\frac{4}{6}$

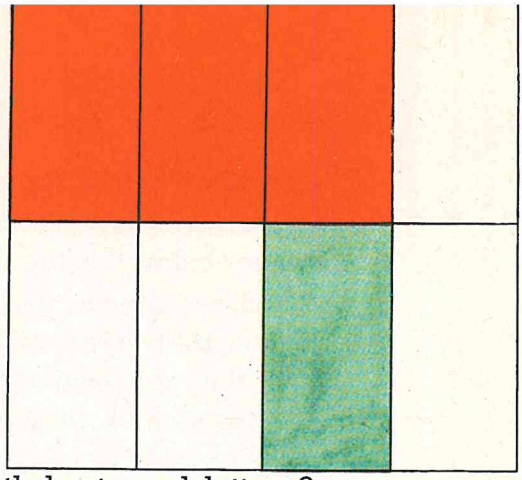
2. Gladys cut the cake into 8 equal pieces. She ate 2 and Glen ate 3. How many did both eat?

What is the name of each piece? What part of the cake did Gladys eat? What part did Glen eat? What part did they both eat? Draw a picture.

3. Mabel cut the pie into 5 equal pieces. She ate 1 piece and Frank ate 2 pieces. How many pieces did they both eat?

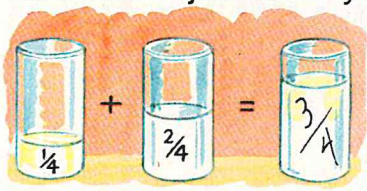
What is the name of each piece? What part of the pie did Mabel eat? What part did Frank eat?

Jerry's Garden



1. The red shows where Jerry has planted beets, and the green part shows where he has planted lettuce. What part of the garden has he planted in beets? What part has he planted in lettuce? What part has he planted in both beets and lettuce?

Jerry would like to know if he has planted more than one-half, less than one-half, or exactly one-half of his garden in beets and lettuce together. Can you tell him? Explain your answer so he can understand just what you mean.



2. Mother had $\frac{1}{4}$ glass of cream and $\frac{2}{4}$ glass of milk. If she pours them together in another glass, how full will the glass be?

3. Marie read $\frac{1}{5}$ of her book last evening and has read $\frac{2}{5}$ of it today. How much has she read in all?

4. John sold $\frac{2}{5}$ of his tickets yesterday and sold $\frac{1}{5}$ of them today. What part of his tickets has he sold in all?

Add these.

5.

$\frac{1}{8}$	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{1}{9}$	$\frac{2}{5}$	$\frac{2}{9}$	$\frac{3}{6}$
$\frac{2}{8}$	$\frac{2}{5}$	$\frac{1}{4}$	$\frac{5}{9}$	$\frac{1}{5}$	$\frac{3}{9}$	$\frac{1}{6}$
$\frac{4}{8}$	$\frac{1}{5}$	$\frac{1}{4}$	$\frac{2}{9}$	$\frac{1}{5}$	$\frac{2}{9}$	$\frac{1}{6}$

Learning the Names Used in Fractions

The number below the line in a fraction tells the number of parts into which the whole was divided. The number below the line is called the **denominator.**

The number above the line in a fraction tells the number of parts taken. The number above the line is called the **numerator.**

In the fraction $\frac{3}{4}$, 4 is the denominator and 3 is the numerator.

1. Tell the denominator and the numerator of each of these fractions.

$\frac{1}{4}$ $\frac{3}{5}$ $\frac{5}{9}$ $\frac{5}{6}$ $\frac{2}{5}$ $\frac{2}{9}$ $\frac{3}{8}$ $\frac{4}{7}$

2. Draw an apple divided into 4 equal parts, with one of the parts taken away. Write the fraction that shows the part taken away. Write the fraction that shows the part that is left.

3. What is alike about the following fractions: $\frac{1}{5}$, $\frac{2}{5}$, $\frac{3}{5}$, and $\frac{4}{5}$?

4. Write three fractions that have the same denominator.

5. I cut a pie into 5 equal parts and ate four parts of it. Write as a fraction the part that I ate.

6. At the picnic, Aunt Nan gave me $\frac{2}{6}$ of a pie, Aunt Ida gave me $\frac{2}{6}$ of a pie, and Aunt Rosa gave me $\frac{2}{6}$ of a pie. What part of a pie did all three give me?

In a fraction, the number above the line is the numerator, and the number below the line is the denominator. The line means "divided by."

Subtracting Easy Fractions

In one example below, you subtract apples. In the other two, you subtract fractions. In each example, tell the name of things you subtract. Then tell the numbers you use to get the answer.

5 apples	5 eighths	$\frac{5}{8}$
− 2 apples	− 2 eighths	$-\frac{2}{8}$
3 apples	3 eighths	$\frac{3}{8}$

When you subtract fractions having the same name, you subtract the numerators only. The denominator does not change, for it is just the name of the numbers you subtract.

1. Mother had $\frac{7}{9}$ of a cake. We ate $\frac{5}{9}$. How much did she have left? Draw a picture to show the whole cake, the $\frac{7}{9}$ Mother had before we ate any, the $\frac{5}{9}$ that we ate, and the part that was left.

2. Ellen had $\frac{7}{8}$ yard of ribbon. She cut off $\frac{2}{8}$ of a yard. What part of a yard did she have left?

3. Mary had 5 cookies. She ate 3 for lunch. What part of her cookies did she eat?

Subtract.

4.

$\frac{3}{4}$	$\frac{2}{3}$	$\frac{6}{8}$	$\frac{7}{9}$	$\frac{4}{5}$	$\frac{3}{5}$	$\frac{5}{6}$	$\frac{4}{5}$	$\frac{8}{9}$
$\frac{2}{4}$	$\frac{1}{3}$	$\frac{5}{8}$	$\frac{2}{9}$	$\frac{3}{5}$	$\frac{2}{5}$	$\frac{4}{6}$	$\frac{2}{5}$	$\frac{5}{9}$

5.

$\frac{7}{8}$	$\frac{4}{6}$	$\frac{5}{9}$	$\frac{2}{5}$	$\frac{5}{5}$	$\frac{4}{8}$	$\frac{6}{9}$	$\frac{2}{4}$	$\frac{5}{8}$
$\frac{2}{8}$	$\frac{3}{6}$	$\frac{3}{9}$	$\frac{1}{5}$	$\frac{4}{5}$	$\frac{1}{8}$	$\frac{5}{9}$	$\frac{1}{4}$	$\frac{2}{8}$

Fractional Parts of an Inch

This is the picture of a piece of a foot ruler. Four inches are shown in the picture. Each inch is divided into halves, fourths, and eighths.

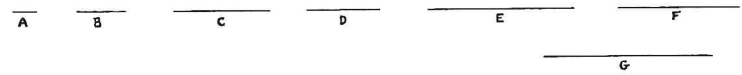
Point out on the ruler the 1-inch marks; the $\frac{1}{2}$-inch marks; the $\frac{1}{4}$-inch marks; the $\frac{1}{8}$-inch marks.

Use the picture of the ruler to show that:

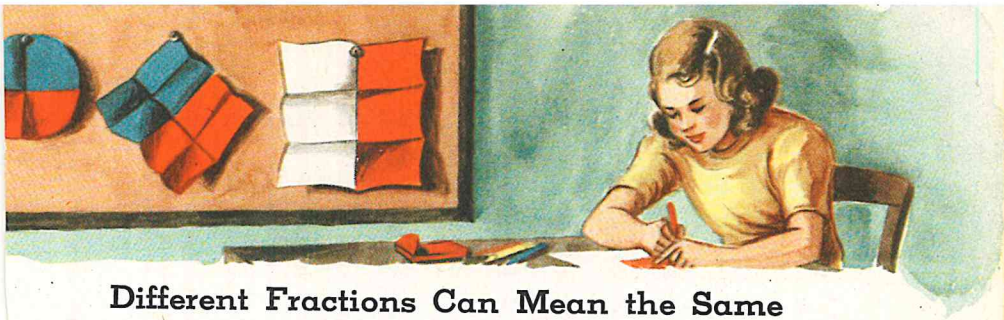
1. $\frac{1}{2}$ inch and $\frac{1}{2}$ inch make 1 inch.
2. $\frac{1}{4}$ inch and $\frac{1}{4}$ inch make $\frac{1}{2}$ inch.
3. $\frac{1}{8}$ inch and $\frac{1}{8}$ inch make $\frac{1}{4}$ inch.
4. $\frac{1}{8}$ inch and $\frac{3}{8}$ inch make $\frac{1}{2}$ inch.
5. $\frac{1}{4}$ inch and $\frac{3}{4}$ inch make 1 inch.

Use the picture as a copy and make a ruler 4 inches long. Mark each inch into halves, fourths, and eighths. Be careful and neat in your work. A ruler that is not made exactly will not measure exactly.

Use the ruler you have made to measure each of these lines. Tell the length of each.



6. If lines a and f are put together, how long will the new line be?
7. If lines b and e are put together, how long will the new line be?
8. If lines b and c are put together, how long will the new line be?



Different Fractions Can Mean the Same

1. Ruth cut out a circle and folded it into 4 equal parts. She has colored 2 parts red and 2 parts blue.

Ruth said she had colored $\frac{2}{4}$ red. Tom said she had colored $\frac{1}{2}$ of it red. Who do you think is right?

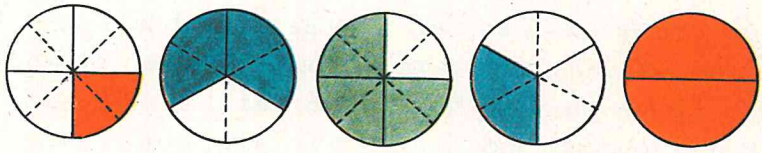
You see different fractions can mean the same part of the whole. $\frac{2}{4}$ means the same as $\frac{1}{2}$.

2. Lois has folded the piece of paper into 8 equal parts and colored 4 of these parts red. She says she has colored $\frac{4}{8}$ of it red. What other fraction could she use instead of $\frac{4}{8}$?

3. Joan has folded the square into 6 equal parts and colored 3 of these parts red. She says she has colored $\frac{3}{6}$ of the square. What other fraction could she use instead of $\frac{3}{6}$?

$\frac{2}{4} = \frac{1}{2}$ $\frac{4}{8} = \frac{1}{2}$ $\frac{3}{6} = \frac{1}{2}$

4. Say or write two different fractions that tell how much of each of these circles is colored.



Changing the Names of Fractions

You must remember these equal fractions.

$\frac{2}{4} = \frac{1}{2}$ $\quad \frac{3}{6} = \frac{1}{2}$ $\quad \frac{2}{6} = \frac{1}{3}$ $\quad \frac{2}{2} = 1$

$\frac{3}{3} = 1$ $\quad \frac{4}{4} = 1$ $\quad \frac{4}{8} = \frac{1}{2}$ $\quad \frac{2}{8} = \frac{1}{4}$

$\frac{4}{6} = \frac{2}{3}$ $\quad \frac{8}{8} = 1$ $\quad \frac{6}{6} = 1$ $\quad \frac{6}{8} = \frac{3}{4}$

Say or write the number that belongs in place of each $*$.

1. $\frac{3}{6} = \frac{*}{2}$ $\quad \frac{4}{8} = \frac{*}{2}$ $\quad 1 = \frac{*}{2}$

2. $\frac{2}{8} = \frac{*}{4}$ $\quad \frac{6}{8} = \frac{*}{4}$ $\quad \frac{6}{6} = *$

3. $\frac{2}{6} = \frac{*}{3}$ $\quad \frac{4}{6} = \frac{*}{3}$ $\quad 1 = \frac{*}{4}$

4. $\frac{8}{8} = *$ $\quad 1 = \frac{*}{3}$ $\quad \frac{2}{4} = \frac{*}{8}$

Draw six circles and call them pies. Letter them *A, B, C, D, E, and F.*

5. Draw lines to "cut" pie *A* into 6 equal parts. Color 2 of these parts black to show that they have been eaten. Say in two ways the part of the pie that has been eaten.

6. Divide pie *B* into 8 equal parts. Erase $\frac{1}{4}$ of the pie to show that it has been eaten.

7. Divide pie *C* into 3 equal parts. Cut each of these parts into halves. How many pieces are there now?

8. Divide pie *D* so that it looks as if it had been cut into sixths. Erase enough to show that $\frac{1}{3}$ of the pie has been eaten.

9. Divide pie *E* so that it looks as if it had been cut into eighths and $\frac{7}{8}$ of the pie had been eaten.

10. Divide pie *F* so that it looks as if it had been cut into fourths, and $\frac{1}{4}$ of it had been eaten.

Comparing Fractions

Which would you rather have:

1. $\frac{1}{2}$ or $\frac{2}{4}$ of a lemon pie?
2. $\frac{8}{8}$ or 1 whole stick of peppermint candy?
3. $\frac{3}{8}$ or $\frac{5}{8}$ of a chocolate bar?
4. $\frac{1}{2}$ or $\frac{2}{2}$ glass of grape juice?
5. $\frac{1}{8}$ or $\frac{1}{4}$ glass of bitter medicine?
6. $\frac{2}{8}$ or $\frac{1}{4}$ pint of ice cream?

Say or write the number that belongs in place of each ?.

7. If I break a crayon into two equal pieces, each piece is ? of the whole.
8. If I break a stick of candy into four equal pieces, each piece is ? of the whole.
9. Mother cut a cake into 9 pieces and the children ate 5 of them. There was ? of the cake left.
10. We had a tank $\frac{3}{8}$ full of gas and added $\frac{5}{8}$ of a tankful. The tank would then hold ? more gas.
11. Monday and Tuesday make $\frac{2}{7}$ of a week; Wednesday, Thursday, and Friday make $\frac{3}{7}$ of a week. All five of these days make ? of a week.

Subtract.

12.

$\frac{3}{3}$	$\frac{3}{4}$	$\frac{5}{6}$	$\frac{7}{8}$	$\frac{7}{9}$	$\frac{4}{5}$	$\frac{3}{8}$	$\frac{6}{6}$	$\frac{5}{7}$
$\frac{1}{3}$	$\frac{2}{4}$	$\frac{4}{6}$	$\frac{2}{8}$	$\frac{5}{9}$	$\frac{3}{5}$	$\frac{2}{8}$	$\frac{1}{6}$	$\frac{3}{7}$

Add.

13.

				$\frac{1}{6}$	$\frac{2}{5}$	$\frac{3}{9}$	$\frac{2}{8}$	$\frac{1}{7}$
$\frac{1}{8}$	$\frac{2}{5}$	$\frac{2}{6}$	$\frac{3}{9}$	$\frac{2}{6}$	$\frac{1}{5}$	$\frac{1}{9}$	$\frac{3}{8}$	$\frac{3}{7}$
$\frac{1}{8}$	$\frac{2}{5}$	$\frac{3}{6}$	$\frac{5}{9}$	$\frac{2}{6}$	$\frac{1}{5}$	$\frac{2}{9}$	$\frac{1}{8}$	$\frac{2}{7}$

The Tigers Play the Cubs

Choose a leader. Choose two teams with the same number in each team. Have someone put the score sheet on the blackboard where everyone can see it.

Teams	Runs Scored Each Time at Bat												Total Score
	1	2	3	4	5	6	7	8	9				
Tigers													
Cubs													

The players will write their work on paper. At the end of each time at bat, the leader will put the examples on the blackboard so that you can check your papers.

Count the number of Tigers that get all right and allow the Tigers that many runs.

Count the runs the same way for the Cubs.

At the end of the game, count the total score.

First Time at Bat	64×5	465×9	2546×8	56×78	795×482
Second Time at Bat	$365 - 227$	$439 - 145$	$742 - 356$	$48{,}902 - 2{,}004$	$19{,}000 - 1{,}106$
Third Time at Bat	$6\overline{)784}$	$6\overline{)621}$	$6\overline{)348}$	$6\overline{)916}$	
	$9\overline{)1893}$	$9\overline{)3583}$	$8\overline{)1592}$	$8\overline{)1206}$	
Game called on account of rain					

Measuring Children

1. Last year Della was $47\frac{2}{8}$ inches tall. She is $49\frac{7}{8}$ inches tall now. How much has she grown in the year?

Subtract the fractions, $\frac{2}{8}$ from $\frac{7}{8}$ leaves $\frac{5}{8}$.

Subtract the whole numbers, 47 from 49 leaves 2.

The answer is $2\frac{5}{8}$ inches.

$$\begin{array}{r} 49\frac{7}{8} \\ 47\frac{2}{8} \\ \hline 2\frac{5}{8} \end{array}$$

2. Lewis was $52\frac{1}{4}$ inches tall last year and has grown $1\frac{2}{4}$ inches. How tall is he now?

Add the fractions, $\frac{1}{4}$ and $\frac{2}{4}$ are $\frac{3}{4}$.

Add the whole numbers, 52 and 1 are 53.

The answer is $53\frac{3}{4}$ inches.

$$\begin{array}{r} 52\frac{1}{4} \\ 1\frac{2}{4} \\ \hline 53\frac{3}{4} \end{array}$$

3. Clifford was $54\frac{1}{8}$ inches tall two years ago and has grown $2\frac{6}{8}$ inches. How tall is he now?

4. Alice was $46\frac{2}{8}$ inches tall two years ago and is now $49\frac{7}{8}$ inches tall. How many inches has she grown?

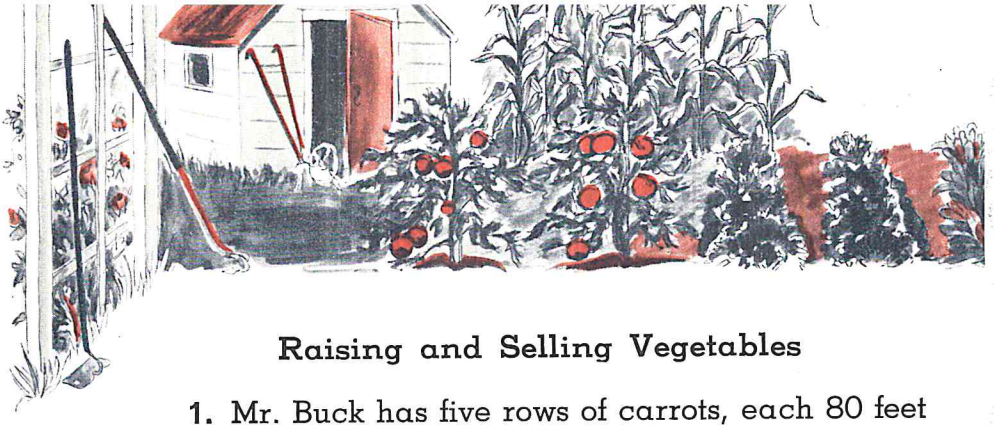
5. Five years ago, Agnes was $41\frac{3}{8}$ inches tall. She has grown $7\frac{4}{8}$ inches. How tall is she now?

6. Henry has grown $7\frac{1}{4}$ inches in four years. He is now $54\frac{2}{4}$ inches tall. How tall was he four years ago?

Add.

7.

$28\frac{1}{4}$	$37\frac{1}{8}$	$77\frac{3}{6}$	$76\frac{2}{4}$	$85\frac{3}{8}$	$19\frac{1}{6}$
$35\frac{1}{4}$	$29\frac{3}{8}$	$25\frac{2}{6}$	$38\frac{1}{4}$	$14\frac{2}{8}$	$25\frac{2}{6}$



Raising and Selling Vegetables

1. Mr. Buck has five rows of carrots, each 80 feet long. If there is an average of 6 carrots to each foot of row, how many carrots will Mr. Buck raise?

2. Mr. Buck ties his carrots in bunches of 8 and sells them at 5¢ a bunch. How much will he get for all the carrots he raises?

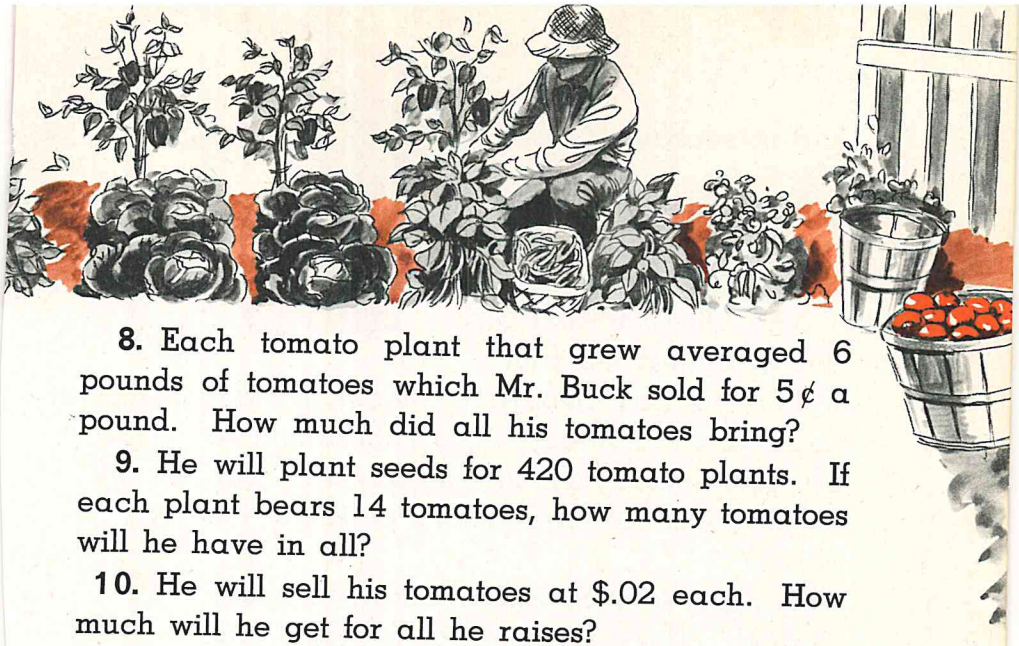
3. He has 7 rows of beets, each 80 feet long. If there is an average of 5 beets to each foot of a row, how many beets will Mr. Buck raise?

4. He ties his beets in bunches of 6 and sells them at 7¢ a bunch. How many bunches of beets will he have? Will there be any left over? How much will he get for all the bunches of beets that he raised?

5. He sold $\frac{1}{5}$ of his beets to one store and $\frac{2}{5}$ of them to another store. What part of his beets did he sell to the two stores?

6. He set out 240 cabbage plants. Of these, 38 either died or did not do well. He sold the others at 12¢ a head. How much did he get for the cabbage?

7. He set out 200 tomato plants. Cut worms killed 40 of them. How many plants were left?



8. Each tomato plant that grew averaged 6 pounds of tomatoes which Mr. Buck sold for 5¢ a pound. How much did all his tomatoes bring?

9. He will plant seeds for 420 tomato plants. If each plant bears 14 tomatoes, how many tomatoes will he have in all?

10. He will sell his tomatoes at $.02 each. How much will he get for all he raises?

11. Mr. Buck expects to pick 240 quarts of green lima beans. How much money will he get for them at 45¢ a quart?

12. He raised 242 pounds of early peas. His family used 18 pounds of them, and he sold the rest at 10¢ a pound. What did he get for his peas?

13. He picked 325 dozen ears of corn. How many ears of corn was this?

14. He set out 320 sweet pepper plants, and frost killed 287 of them. How many did he have left?

15. A man bought $6\frac{1}{4}$ pounds of string beans, and said, "I believe I will need $2\frac{1}{2}$ pounds more." How much did this make in all?

16. One tomato weighed $\frac{3}{8}$ pound and another weighed $\frac{5}{8}$ pound. Mr. Buck said that together they weighed a pound. Was he right?

Subtracting Years

Some important dates about Presidents are given below.

What does the first column of figures tell you?

How old was George Washington when he became President? The subtraction at the right shows that he was 57 years old.

$$\begin{array}{r} 1789 \\ -\ 1732 \\ \hline 57 \end{array}$$

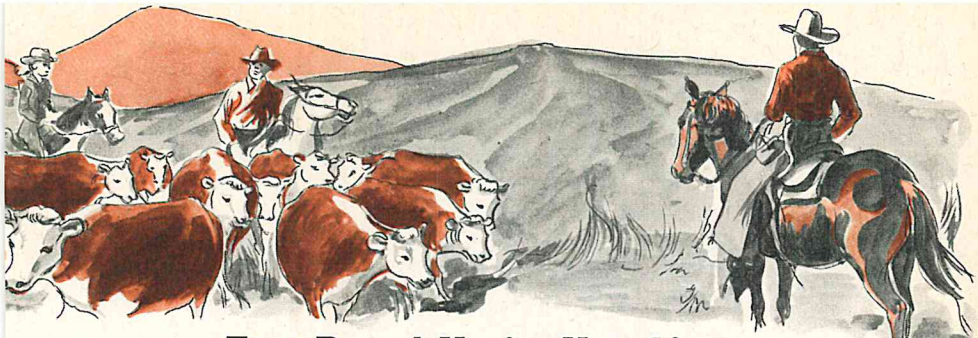
What does the third column of figures tell you?

How old was George Washington when he died? The subtraction at the right tells you that he was 67 years old.

$$\begin{array}{r} 1799 \\ -\ 1732 \\ \hline 67 \end{array}$$

Find the age of each person below when he became President and his age when he died.

President	Born	Became President	Died
George Washington	1732	1789	1799
John Adams	1735	1797	1826
Thomas Jefferson	1743	1801	1826
James Madison	1751	1809	1836
John Quincy Adams	1767	1825	1848
Andrew Jackson	1767	1829	1845
James K. Polk	1795	1845	1849
Abraham Lincoln	1809	1861	1865
Theodore Roosevelt	1858	1901	1919
Woodrow Wilson	1856	1913	1924
Franklin D. Roosevelt	1882	1933	1945



First Round-Up for Unit 10

1. Betty knitted $\frac{1}{5}$ of her sweater last week and $\frac{2}{5}$ of it this week. What part did she knit in both weeks?

2. Mother paid $\frac{1}{6}$ of a bill last week and $\frac{5}{6}$ of it this week. Has she paid the whole bill? How do you know?

3. Bobby gave $\frac{4}{9}$ of his candy away and ate $\frac{2}{9}$ of it. What part did he give away and eat?

4. Aunt Emma had $\frac{5}{6}$ of a pie on a plate and gave Tommy $\frac{4}{6}$. How much was left on the plate?

5. Add.

$\frac{1}{6}$	$\frac{5}{8}$	$\frac{1}{3}$	$\frac{4}{9}$	$\frac{1}{8}$	$\frac{1}{6}$	$\frac{1}{4}$	$\frac{3}{7}$	$\frac{2}{9}$
$\frac{4}{6}$	$\frac{2}{8}$	$\frac{1}{3}$	$\frac{1}{9}$	$\frac{2}{8}$	$\frac{1}{6}$	$\frac{1}{4}$	$\frac{1}{7}$	$\frac{1}{9}$
				$\frac{4}{8}$	$\frac{3}{6}$	$\frac{1}{4}$	$\frac{2}{7}$	$\frac{4}{9}$

6. Subtract.

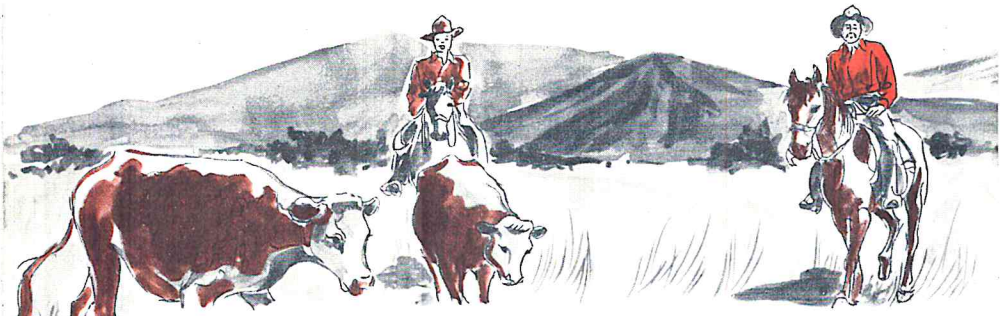
$\frac{3}{4}$	$\frac{5}{8}$	$\frac{5}{6}$	$\frac{7}{8}$	$\frac{8}{9}$	$\frac{2}{3}$	$\frac{6}{8}$	$\frac{4}{9}$	$\frac{6}{7}$
$\frac{2}{4}$	$\frac{2}{8}$	$\frac{4}{6}$	$\frac{4}{8}$	$\frac{6}{9}$	$\frac{1}{3}$	$\frac{1}{8}$	$\frac{2}{9}$	$\frac{1}{7}$

7. Find the sum of 3,756 and 3,982.

8. Find the product of 476 times 382.

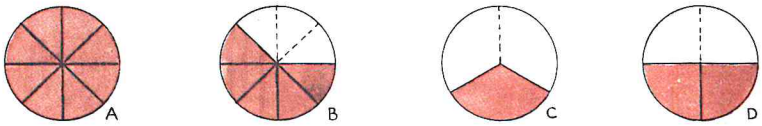
9. Divide 49,862 by 9.

Those who missed more than four in the First Round-Up will work on page 254. The others will work on page 255.



Catching Those That Got Away

Think of these circles as cakes cut into equal pieces.



1. Into how many pieces has cake A been cut? What part of the whole is each piece?

2. If cake A had been cut into 4 equal pieces, what part of the whole would each piece have been?

3. What part of cake B is gone? What part is left?

4. Two pieces of cake C are gone. What part of cake C is left?

5. Two pieces of cake D are gone. If 1 of these pieces is put back on the plate, what part of the cake would be on the plate then?

Draw four squares. Mark each off and color it to show:

6. Three-fourths

7. One-half

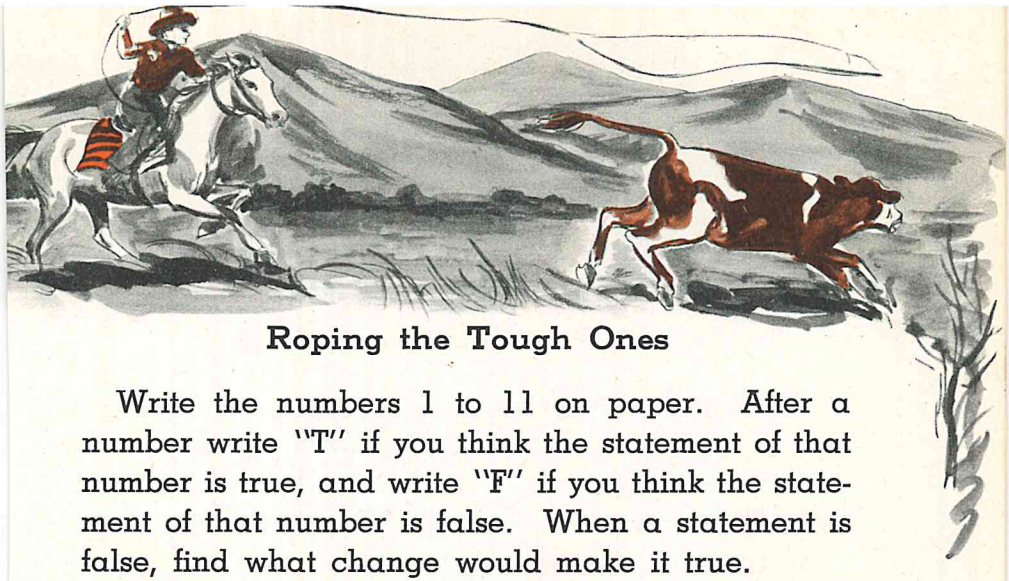
8. One-third

9. Two-fifths

Add.

10. One-fourth and two-fourths

11. $\frac{1}{5}$ and $\frac{2}{5}$



Roping the Tough Ones

Write the numbers 1 to 11 on paper. After a number write "T" if you think the statement of that number is true, and write "F" if you think the statement of that number is false. When a statement is false, find what change would make it true.

1. The busy clock ticks off 26 hours a day.

2. John's father is a small man. He is 6 feet tall.

3. Our baby is thin. He weighs 100 pounds.

4. I spent 7 days with my aunt. Mother says I was there a week.

5. I ate $\frac{1}{2}$ the cake. Then I ate $\frac{1}{4}$ more. Then I ate another $\frac{1}{4}$. This means I ate all the cake.

6. This is Walter's birthday. It will be 12 months before he has another birthday.

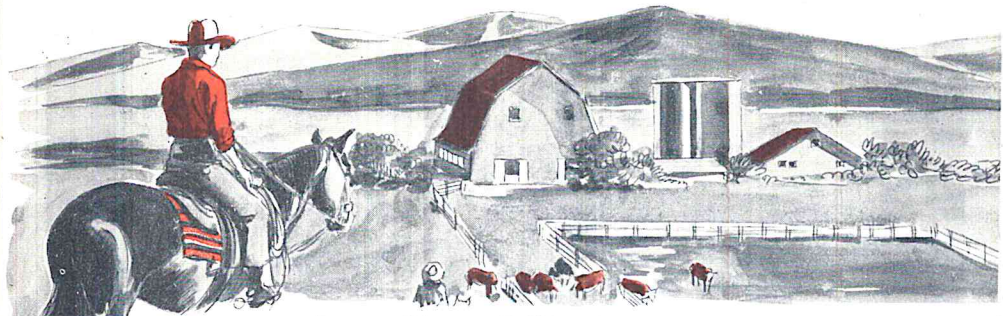
7. I saw an apple that weighed 40 pounds.

8. I bought 18 oranges for Mother. She said that was one and one-half dozen oranges.

9. I spent a nickel, two dimes, and a quarter. That was exactly one-half dollar.

10. Half past six and six-thirty mean the same in telling time.

11. Joe says a quarter and one-fourth dollar are the same.



Last Round-Up for Unit 10

Write with figures.

1. Two-thirds
2. Five-ninths
3. Three-fifths
4. Seven-eighths
5. One-half
6. One-fourth

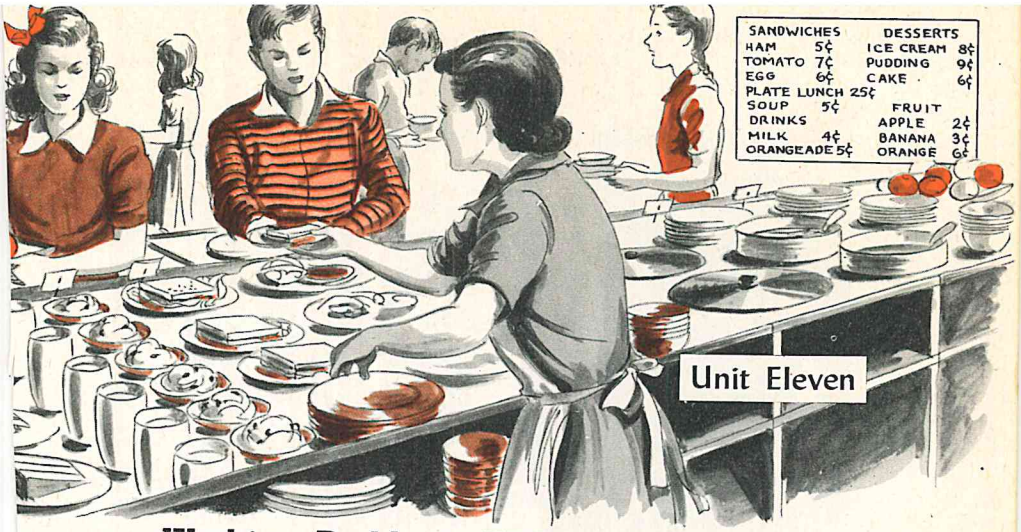
Draw two squares, a circle.

7. Divide the circle into sixths.
8. Divide the small square into eighths.
9. Divide the large square into thirds.
10. Ray gave $\frac{1}{4}$ of his candy to Jerry and $\frac{1}{4}$ of it to Albert. How much did he give to both Jerry and Albert? How much did he have left?
11. George had $\frac{7}{8}$ of a watermelon. He sold $\frac{3}{8}$ of it. How much was left?
12. Add.

6	8	43	56	507	693	431
0	1	8	41	28	321	99
7	4	33	9	17	42	300
3	5	9	26	548	420	40
5	3	87	94	31	137	596

13. Subtract.

58	63	397	471	765	943	701
32	28	145	138	395	657	304

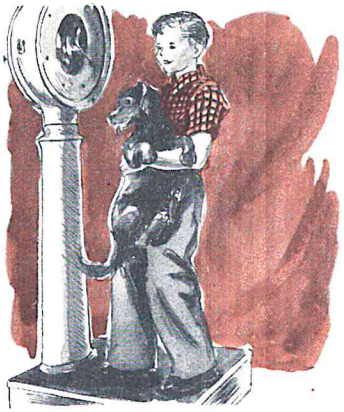


Working Problems Without a Pencil

Walter and Alice would look funny in the school lunchroom if they had to use a pencil to find the cost of a lunch. Can you find the cost of these lunches quickly without a pencil? If you are not quick, you will hold up the lunch line.

1. Alice bought soup, an egg sandwich, and ice cream. What did her lunch cost?
2. Walter has exactly 15¢. Will he be able to buy a ham sandwich, milk, and pudding?
3. What would you buy if you had exactly 15¢?
4. What would you buy if you had two dimes?
5. Agnes has a quarter. She bought a tomato sandwich, two apples, and a piece of cake. How much change should she get back?
6. If you had a quarter what would you buy?
7. Make a lunchroom of your own. Paste pictures of food with prices on a large sheet of paper. Make up five problems from your own lunchroom.

No One Would Want to Use a Pencil Here



1. Paul weighs 120 pounds when he is holding his dog. Paul puts the dog down, and then the scales read only 80 pounds. How much does Paul really weigh and how much does the dog weigh?

2. Paul sold 18 magazines at 10¢ each. How much money should he have in his pocket from these sales?

3. Lead soldiers cost 5¢ each. Paul has two nickels and two dimes that he can spend for lead soldiers. How many can he buy?

4. Paul wants a new bicycle that costs $27. He has only $15. How much more money does he need?

5. Jane has a quarter. Has she enough to buy a 10-cent doll and two 10-cent outfits for the doll?

6. Jane said she had worked one-half her problems. If there were 32 problems in all, how many had she worked?

7. Paul divided two dozen plums equally among six children. How many plums did each get?

8. Plans and material for a toy airplane cost 65¢. How much would plans and materials for two airplanes cost?

Dividing Numbers into Parts

1. There are 8 rubber balls in the box. To find $\frac{1}{2}$ the number of balls in the box, I divide the whole number by 2.

$\frac{1}{2}$ of 8 means $8 \div 2 = 4$.

To find $\frac{1}{2}$ of any number, divide that number by 2.

2. Draw a box with 8 balls in it on the blackboard. Draw lines across the box to divide the number of balls into fourths.

$\frac{1}{4}$ of 8 means $8 \div 4 = 2$.

To find $\frac{1}{4}$ of any number, divide it by 4.

3. Find $\frac{1}{2}$ of each of these numbers.

16 42 28 54 72 66 84 36

4. Find $\frac{1}{4}$ of each of these numbers.

16 48 32 64 72 96 76 84

5. Make up a good rule for finding $\frac{1}{3}$ of a number.

6. Find $\frac{1}{3}$ of each of these numbers.

24 36 42 54 69 72 84 90

7. Make up a good rule for finding $\frac{1}{8}$ of a number.

8. Find $\frac{1}{8}$ of each of these numbers.

24 40 64 72 96 56 88 112

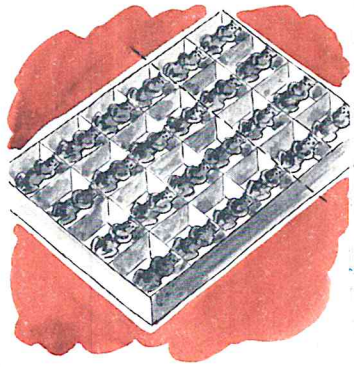
$\frac{1}{4}$ of 24 may also be written as $\frac{1}{4} \times 24$.

$\frac{1}{6}$ of 42 may also be written as $\frac{1}{6} \times 42$.

9. Write the answers.

$\frac{1}{6}$ of 54 $\frac{1}{6} \times 42$ $\frac{1}{8} \times 72$ $\frac{1}{9} \times 45$

About Two Dozen Bears



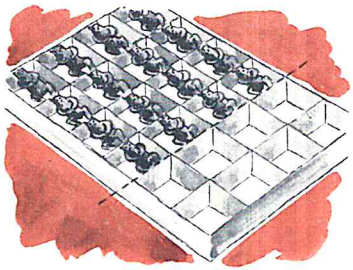
1. Here is a box with 24 candy bears in it. The dotted lines show that $\frac{1}{3}$ of 24 is 8.

Draw this box of bears. Draw lines across the box to divide the number of bears into halves; into fourths; into sixths; into eighths.

2. Read, saying the right number for each ?.

$\frac{1}{2}$ of 24 means $24 \div 2 = ?$.
$\frac{1}{4}$ of 24 means $24 \div 4 = ?$.
$\frac{1}{6}$ of 24 means $24 \div 6 = ?$.
$\frac{1}{8}$ of 24 means $24 \div 8 = ?$.

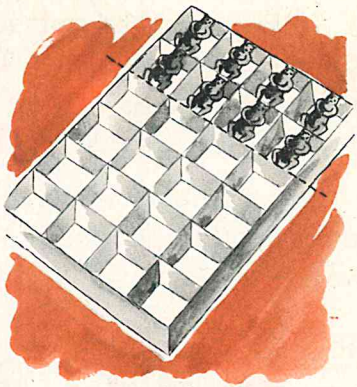
3. Monday morning the box had been full of candy bears. Monday evening it looked like this. One-third of the bears had been sold. How many bears had been sold? How many bears were left? What part was left?



Say or write the answers.

4.	$\frac{1}{2} \times 24$	$\frac{1}{2} \times 18$	$\frac{1}{2} \times 46$	$\frac{1}{2} \times 34$
5.	$\frac{1}{3} \times 18$	$\frac{1}{3} \times 45$	$\frac{1}{3} \times 39$	$\frac{1}{3} \times 75$
6.	$\frac{1}{4} \times 36$	$\frac{1}{4} \times 76$	$\frac{1}{4} \times 52$	$\frac{1}{4} \times 92$
7.	$\frac{1}{5} \times 25$	$\frac{1}{5} \times 70$	$\frac{1}{5} \times 65$	$\frac{1}{5} \times 90$
8.	$\frac{1}{6} \times 36$	$\frac{1}{6} \times 78$	$\frac{1}{6} \times 60$	$\frac{1}{6} \times 72$

More About Two Dozen Bears



1. Tuesday evening the box of bears looked like this. How many bears had been sold?

I could stop to count all the empty spaces, but here is a better way. I see that $\frac{2}{3}$ of the bears are gone. I think, "If $\frac{1}{3}$ of 24 is 8, then $\frac{2}{3}$ of 24 is 16. This means that 16 bears have been sold."

2. Find $\frac{3}{4}$ of 24 bears.

First think $\frac{1}{4}$ of 24 is 6. Then think 3 times $\frac{1}{4}$ or $\frac{3}{4}$ of 24 is 3 times 6 or 18.

Find these answers. Explain how you do each.

3. $\frac{3}{8}$ of 24 bears $\quad\quad$ $\frac{5}{8}$ of 24 bears

4. $\frac{1}{6}$ of 24 bears $\quad\quad$ $\frac{5}{6}$ of 24 bears

5. $\frac{7}{8}$ of 24 bears $\quad\quad$ $\frac{3}{6}$ of 24 bears

Find these answers.

6.	$\frac{2}{3}$ of 12	$\frac{3}{5}\times 15$	$\frac{7}{8}\times 16$	$\frac{3}{4}\times 20$
7.	$\frac{2}{9}$ of 18	$\frac{3}{7}\times 21$	$\frac{5}{6}\times 30$	$\frac{2}{5}\times 25$
8.	$\frac{2}{3}$ of 36	$\frac{4}{9}\times 36$	$\frac{5}{6}\times 36$	$\frac{7}{9}\times 36$
9.	$\frac{3}{7}$ of 84	$\frac{3}{6}\times 84$	$\frac{3}{4}\times 84$	$\frac{5}{7}\times 84$
10.	$\frac{2}{9}$ of 54	$\frac{5}{6}\times 54$	$\frac{4}{9}\times 54$	$\frac{2}{3}\times 54$

11. There are 292 pages in a book. If Joan is $\frac{3}{4}$ the way through, how many pages has she read?

12. Harold weighs 114 pounds. Tom weighs $\frac{5}{6}$ as much. How much does Tom weigh?

Writing Small Remainders as Fractions

1. Mrs. Grant wants to divide 9 doughnuts equally among her 4 children. How many doughnuts should each child get?

Mrs. Grant thinks *2 doughnuts with 1 left over* / *4)9 doughnuts*

She can give each child 2 whole doughnuts and can divide the doughnut that is left over into 4 equal parts.

Each child will get $2\frac{1}{4}$ doughnuts as his share.

Mrs. Grant's division will look like this.

$$4\overline{)9}\qquad 2\frac{1}{4}$$

2. Draw a picture and do the dividing to show how Mrs. Grant could divide 10 doughnuts equally among her 4 children.

3. Draw a picture and do the dividing to show how Mrs. Brown could divide 7 doughnuts equally among her 3 children.

Divide. Write each remainder as a fraction.

4. $4\overline{)25}$ $3\overline{)13}$ $5\overline{)16}$ $2\overline{)15}$ $4\overline{)49}$

5. $9\overline{)28}$ $7\overline{)15}$ $8\overline{)17}$ $4\overline{)21}$ $3\overline{)22}$

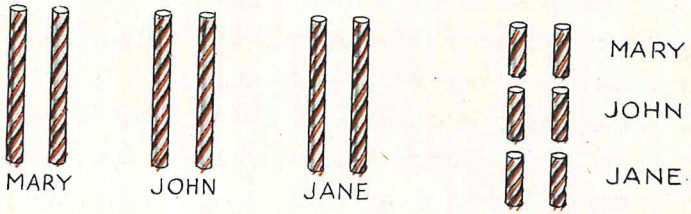
Larger Remainders as Fractions

1. Mrs. Brown wants to divide 8 sticks of candy equally among her 3 children. How much will each child get?

Mrs. Brown thinks

2 sticks with 2 left over
3)8 sticks of candy

She can give 2 whole sticks to each child, and there will be 2 sticks left over. She will break each of these into 3 equal parts. In all, each child will get $2\frac{2}{3}$ sticks of candy.



Mrs. Brown's division will look like this.

$$3\overline{)8}\quad 2\frac{2}{3}$$

2. Draw a picture and do the dividing to show how Mrs. Brown can divide 11 apples equally among her 3 children.

3. Draw a picture and do the dividing to show how Mrs. Grant can divide 11 apples equally among her 4 children.

Divide. Write each remainder as a fraction.

4. $5\overline{)22}$ $4\overline{)27}$ $8\overline{)29}$ $3\overline{)32}$ $4\overline{)295}$

5. $6\overline{)41}$ $7\overline{)24}$ $2\overline{)33}$ $4\overline{)46}$ $7\overline{)445}$

Multiplying Whole Numbers by Fractions

Things to remember:

$\frac{1}{4}$ of $12 = \frac{1}{4} \times 12 = 12 \div 4 = 3$.

$\frac{3}{4}$ of $12 = \frac{3}{4} \times 12 = 3$ times $\frac{1}{4} \times 12 = 9$.

Write these answers.

1. $\frac{3}{5}$ of 45 $\quad \frac{1}{3} \times 36 \quad \frac{2}{3} \times 63 \quad \frac{2}{5} \times 45$

2. $\frac{5}{9}$ of 99 $\quad \frac{2}{3} \times 99 \quad \frac{5}{9} \times 63 \quad \frac{6}{7} \times 63$

3. Mr. Frank had 630 sheep, and $\frac{1}{7}$ of them died. How many sheep died? How many sheep were left? What part of the sheep were left?

4. Cheese costs 90¢ a pound. How much will $\frac{1}{3}$ pound cost? $\frac{2}{3}$ pound? $\frac{1}{2}$ pound?

5. Baked ham is on sale at 72¢ a pound. What must I pay for $\frac{1}{4}$ pound? For $\frac{3}{4}$ pound? For $\frac{1}{2}$ pound? For $\frac{1}{3}$ pound? For $\frac{5}{8}$ pound?

6. There are 5,280 feet in a mile. How many feet above ground is an airplane that is $\frac{1}{3}$ mile up? $\frac{2}{3}$ mile? $\frac{3}{4}$ mile? $\frac{7}{8}$ mile?

7. Mrs. Wood bought $\frac{1}{2}$ pound of coffee at 48¢ a pound and $\frac{1}{4}$ pound of cheese at 40¢ a pound. What did she pay for both?

8. There are 240 pages in a book. How many pages must I read to be $\frac{3}{4}$ through? To be $\frac{2}{3}$ through? To be $\frac{5}{6}$ through? To be $\frac{7}{8}$ through?

9. There are 144 candy bars in a box. The storekeeper sold $\frac{3}{8}$ of them one day, $\frac{1}{6}$ of them another day, and $\frac{2}{9}$ of them the third day. How many candy bars did he sell each day? How many were left in the box?

Just For Fun

1. Which would you rather get for a present?
$\frac{1}{2}$ of \$24 $\frac{1}{4}$ of \$44 $\frac{1}{3}$ of \$30

2. Which debt would you rather owe?
$\frac{3}{5}$ of \$25 $\frac{3}{8}$ of \$40 $\frac{1}{3}$ of \$45

3. Which would you rather earn?
$\frac{7}{8}$ of \$16 $\frac{5}{6}$ of \$24 $\frac{3}{4}$ of \$32

4. Which answer is nearest to one dozen eggs?
$\frac{5}{6}$ of 18 eggs $\frac{6}{7}$ of 14 eggs $\frac{5}{8}$ of 24 eggs

5. Which is nearest to one foot?
$\frac{5}{8}$ of 32 in. $\frac{4}{5}$ of 20 in. $\frac{3}{4}$ of 24 in.

6. Which is nearest to your age?
$\frac{6}{7}$ of 21 years $\frac{1}{2}$ of 20 years $\frac{3}{4}$ of 24 years

7. Which is the nearest to the number of hours in a day?
$\frac{2}{5}$ of 35 hours $\frac{2}{3}$ of 18 hours $\frac{1}{2}$ of 48 hours

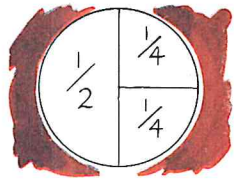
8. Which answer is the same as the number of days in a week?
$\frac{2}{5}$ of 10 days $\frac{1}{2}$ of 16 days $\frac{1}{3}$ of 21 days

9. Which of these is nearest to a pound?
$\frac{2}{3}$ of 27 oz. $\frac{1}{3}$ of 18 oz. $\frac{1}{2}$ of 32 oz.

10. Here is a record of Alice's spelling for one week. On which day did she get the most correct?

Day	Part Spelled Correctly
Monday	$\frac{5}{6}$ of 30 words
Tuesday	$\frac{2}{2}$ of 50 words
Wednesday	$\frac{7}{8}$ of 32 words
Thursday	$\frac{3}{4}$ of 40 words
Friday	$\frac{2}{3}$ of 36 words

Writing Fractions in Best Form



From the picture you can see that $\frac{1}{2}$ equals $\frac{2}{4}$. It is better to write $\frac{1}{2}$ than $\frac{2}{4}$.

Make pictures to show that $\frac{2}{8}$ is equal to $\frac{1}{4}$, that $\frac{2}{6}$ is equal to $\frac{1}{3}$, and to show the other fractions given in the table below.

$\frac{2}{4}$ in best form is $\frac{1}{2}$. $\frac{4}{8}$ in best form is $\frac{1}{2}$.
$\frac{2}{8}$ in best form is $\frac{1}{4}$. $\frac{3}{6}$ in best form is $\frac{1}{2}$.
$\frac{2}{6}$ in best form is $\frac{1}{3}$. $\frac{3}{9}$ in best form is $\frac{1}{3}$.
$\frac{6}{8}$ in best form is $\frac{3}{4}$. $\frac{4}{6}$ in best form is $\frac{2}{3}$.

The best form of each of the following is 1:

$\frac{2}{2}$ $\frac{3}{3}$ $\frac{4}{4}$ $\frac{5}{5}$ $\frac{6}{6}$ $\frac{7}{7}$ $\frac{8}{8}$ $\frac{9}{9}$

1. Add. Write each answer in best form.

		$\frac{2}{8}$	$\frac{1}{6}$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{2}{9}$	$\frac{1}{7}$	$\frac{2}{5}$
$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{8}$	$\frac{1}{6}$	$\frac{2}{4}$	$\frac{1}{6}$	$\frac{1}{9}$	$\frac{1}{7}$	$\frac{2}{5}$
$\frac{3}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{2}{6}$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{3}{9}$	$\frac{2}{7}$	$\frac{1}{5}$

2. Subtract. Write each answer in best form.

$\frac{3}{4}$	$\frac{5}{8}$	$\frac{7}{8}$	$\frac{5}{6}$	$\frac{7}{9}$	$\frac{5}{8}$	$\frac{5}{9}$	$\frac{4}{6}$	$\frac{7}{8}$
$\frac{1}{4}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{6}$	$\frac{4}{9}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{6}$	$\frac{1}{8}$

3. Mrs. Grant divides 10 doughnuts equally among 4 children. Draw a picture to show how she would do this to make the answer $2\frac{2}{4}$. Draw another picture to show how she would do it to make the answer $2\frac{1}{2}$.

Changing Quotients to Best Form

1. If I divide 15 cookies equally among 6 children, how many cookies will each child get?

The first quotient form is $2\frac{3}{6}$. Written in best form, this is $2\frac{1}{2}$.

$2\frac{3}{6} = 2\frac{1}{2}$

$6\overline{)15}$

Divide. Write each quotient in best form.

2. $9\overline{)21}$ $8\overline{)18}$ $4\overline{)38}$ $6\overline{)20}$ $8\overline{)44}$

3. $6\overline{)34}$ $9\overline{)42}$ $8\overline{)66}$ $8\overline{)54}$ $9\overline{)75}$

4. $4\overline{)138}$ $9\overline{)402}$ $6\overline{)392}$ $8\overline{)650}$ $6\overline{)574}$

A Fraction Quiz

5. How do you find $\frac{1}{3}$ of a number? $\frac{1}{2}$? $\frac{1}{4}$?

6. How do you find $\frac{2}{3}$ of a number? $\frac{3}{4}$? $\frac{5}{6}$?

7. How much is $\frac{1}{4}$ of 16? Is $\frac{3}{4}$ of 16?

8. How much is $\frac{1}{5}$ of 30? Is $\frac{3}{5}$ of 30?

9. When you go to the store do you ask for $\frac{4}{8}$ of a pound of butter? What fraction would you use instead of $\frac{4}{8}$?

10. When you go to the store do you ask for $\frac{2}{6}$ of a dozen eggs? What fraction would you use instead of $\frac{2}{6}$?

11. Would you tell a friend that he could have $\frac{3}{9}$ of your candy? Why does that sound funny?

12. Would your mother laugh if you told her that you knew $\frac{6}{8}$ of your spelling words? What fraction would she want you to say instead of $\frac{6}{8}$?

Using Fractions at the Store

Baked Ham	80¢ lb.	Oranges	60¢ doz.
Boiled Ham	48¢ lb.	Peaches	2 lb. for 15¢
Bacon	36¢ lb.	Apples	5¢ lb.
Swiss Cheese	72¢ lb.	Eggs	32¢ doz.

1. What is the cost of 2 doz. eggs? Of $\frac{1}{2}$ doz. eggs? Of $2\frac{1}{2}$ doz. eggs?

First Step
32¢
×2
64¢

Second Step
16¢
2)32¢

Third Step
64¢
16¢
80¢

2. What is the cost of 2 lb. of bacon? Of $\frac{1}{2}$ lb. of bacon? Of $2\frac{1}{2}$ lb. of bacon?

3. Find the cost of $\frac{1}{4}$ lb. of boiled ham; of $\frac{3}{4}$ lb.

4. What is the cost of $\frac{1}{3}$ doz. oranges? Of $\frac{2}{3}$ doz.? Of $3\frac{1}{2}$ doz.?

5. What is the cost of $\frac{1}{2}$ lb. of baked ham? Of $\frac{3}{4}$ lb.? Of $\frac{7}{8}$ lb.? Of $1\frac{1}{4}$ lb.?

6. What is the cost of $\frac{1}{4}$ lb. of Swiss cheese? Of $\frac{1}{2}$ lb.? Of $1\frac{1}{2}$ lb.?

7. What is the cost of 2 lb. of peaches and 2 lb. of apples?

8. What is the cost of 4 lb. of peaches and 2 dozen oranges?

For Your Store in the Classroom

Cut out pictures of things sold in a grocery, and fasten the pictures to a bulletin board. Find the right prices and write them by the pictures.

Giants Play Red Birds

Choose a leader, choose teams, and keep score as you did on page 248. This is a cloudy day; the game may be less than nine innings.

First Inning	2 4 7 9 3	34 67 5 8 89	345 472 189 45	3,465 1,900 2,010	1,009 2,984 561	663 37 8 15
Second Inning	354 −9	84 −29	1,000 −5	3,001 −1,076	3,654 −3,126	5,892 −4,979
Third Inning	38 ×3	147 ×5	1,259 ×8	58 ×39	484 ×32	798 ×136
Fourth Inning	$8\overline{)63}$	$6\overline{)357}$	$5\overline{)1255}$	$4\overline{)1608}$	$7\overline{)1674}$	
Fifth Inning	$\frac{1}{8}+\frac{5}{8}+\frac{2}{8}$		$\frac{2}{9}+\frac{4}{9}+\frac{1}{9}$		$\frac{1}{4}+\frac{3}{4}$	
Sixth Inning	$\frac{3}{4}-\frac{1}{4}$		$\frac{7}{8}-\frac{5}{8}$		$\frac{5}{6}-\frac{1}{6}$	

Game called. Too dark to play.

The Calendar

You have already learned about the clock and how it helps us to tell time. Study again the table of time on page 191.

The calendar also helps us to tell time.

7 days (da.) = 1 week (wk.)
12 months (mo.) = 1 year (yr.)
365 days = 1 year
366 days = 1 leap year

January

Sun.	Mon.	Tu.	Wed.	Th.	Fri.	Sat.
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

Days of the Week	Months of the Year	
Sunday (Sun.)	January (Jan.)	July
Monday (Mon.)	February (Feb.)	August (Aug.)
Tuesday (Tues.)	March (Mar.)	September (Sept.)
Wednesday (Wed.)	April (Apr.)	October (Oct.)
Thursday (Thurs.)	May	November (Nov.)
Friday (Fri.)	June	December (Dec.)
Saturday (Sat.)		

1. Bring a calendar for this year to school. Find the month and day of your birthday. Make a copy of the calendar of this month in your notebook.

2. Find and mark each of these dates on the calendar:

February 12, Lincoln's birthday; February 22, Washington's birthday; July 4, Independence Day; June 14, Flag Day; New Year's Day; November 11, Armistice Day; December 25, Christmas.

More About the Calendar

1. Cover page 270. Write the days of the week in order, being careful to spell each one correctly. Uncover page 270 and check.

2. Cover page 270 again. Write the months of the year in order, being careful to spell each one correctly. Uncover page 270 and check.

3. Look at a calendar and answer these questions: Which months have 31 days? Which have 30 days? Which is the shortest month? How many days does it have?

4. You can find the number of days in a year. Copy and finish the table below.

7 months have 31 days each, $7 \times 31 = ?$
4 months have 30 days each, $4 \times 30 = ?$
1 month has 28 days, $1 \times 28 = ?$

12 months, or 1 year, have ?

5. February has 29 days in a leap year. The last two figures in a leap year can be divided evenly by 4. The years 19**44**, 19**48**, and so on are leap years. The years 19**43**, 19**45**, 19**50**, and so on are not leap years. Because February has an extra day in a leap year, there are 366 days in a leap year.

Tell which of the following years are leap years.
19**60** 18**21** 18**63** 14**92** 17**15** 19**14** 19**38** 19**54**

6. If a year ends in two 0's, it is a leap year only if it can be divided evenly by 400. The years 1200, 1600, and 2000 are leap years; the years 1400, 1700, 1900, and 2100 are not leap years.

Measures of Weight

16 ounces (oz.) = 1 pound (lb.)
2000 pounds (lb.) = 1 ton (T.)

1. Name some things bought by the ounce; by the pound; by the ton.

2. Name something that weighs about 1 ounce; something that weighs about 1 pound; about 5 pounds; about 25 pounds.

3. How much do you weigh? If the school has scales, try to find the exact weight of each one in class. Learn how to use the scales.

Copy These in Your Arithmetic Notebook

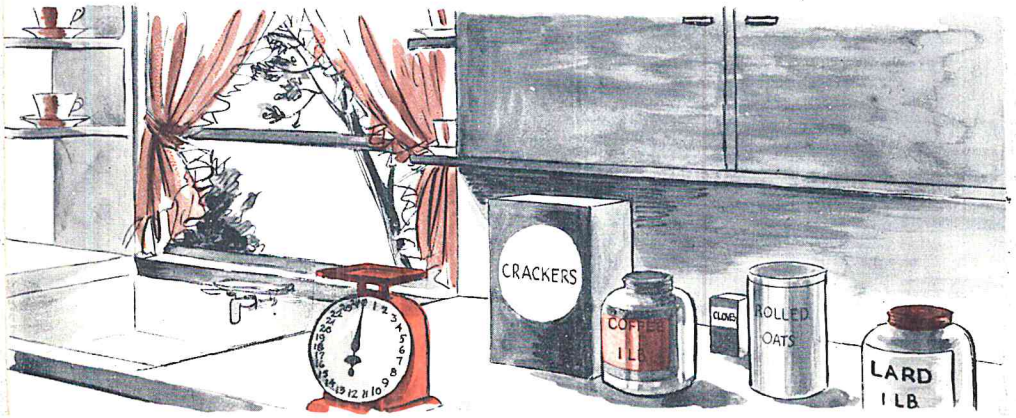
The weights printed on spice cans in your home.

The weights printed on bread wrappers, sugar sacks, cereal boxes, cookie and cracker boxes, and other things.

Read to the class what you have copied in your notebook.

A Talk with the Postman or Post Office Clerk

Find out all you can about the cost of sending letters and parcels through the mail. Why does the post office clerk weigh packages? Why does he sometimes weigh letters?



Problems About Weight Measures

1. Fancy shelled peanuts cost 3¢ an ounce. How much is this a pound?

2. A bushel of coal weighs 80 pounds. How much do 25 bushels weigh?

3. Mr. Frost bought 100 bushels of coal. How many tons was that?

4. The City Coal Company has a 5-ton truck. How many pounds will this truck carry?

5. Oscar bought $\frac{1}{2}$ ton of ice to use at a picnic in the country. If 125 pounds melted on the way, how many pounds were left?

6. The grocer sold a customer $\frac{3}{4}$ pound of black pepper. How many ounces was this?

7. At 6¢ a pound, what does a 25-pound sack of sugar cost?

8. The butcher had 1 lb. 8 oz. of bacon on the scales. He called it $1\frac{1}{2}$ lb. Was he right?

9. The grocer sold a quarter pound of butter. How many ounces was this?

10. A recipe calls for $\frac{1}{8}$ pound of raisins in a cake. How many ounces is this?

11. Mother bought $\frac{1}{4}$ pound of red pepper. How many ounces was this?

12. Frank bought $\frac{1}{8}$ pound of candy corn, $\frac{1}{8}$ pound of mints, and $\frac{6}{8}$ pound of chocolate chips. Did he buy exactly 1 pound of candy, or more, or less than a pound?

13. If there are 16 tablespoons in a cup, how many tablespoons are in $\frac{1}{4}$ cup?

What Did Mrs. Brown Buy?

Tom works in a grocery store. Every time he fills an order he makes out two copies of a sales slip. One copy he keeps at the store. The other he sends with the order.

1. Can you tell what Mrs. Brown bought by reading this sales slip which came with her groceries?

The Parklane Market

Fine Meats and Fancy Groceries

814 Parklane Avenue
St. Paul, Minnesota

To Mrs. Brown Address 24 W. 4th St. Date 5/15/48

Quantity	Articles	Price	Amount
10 bars	Soap	5¢ each	$0.50
½ lb.	Cheese	32¢ a lb.	0.16
2 lb.	Pork Chops	35¢ a lb.	0.70
1 box	Corn Crunches	17¢ a box	0.17
			$1.53

2. Why does the grocer keep a copy of the sales slip in his store?

3. Why does Mrs. Brown want a sales slip sent with her order?

4. If Mrs. Brown paid for this order, how should the sales slip be marked?

5. Why should you keep all of your sales slips?

6. If you had paid your bill and your grocer said you had not, how could you prove that you had paid?

More About Sales Slips

1. Bring several sales slips to class. Show them to each other. Then paste them in your notebook.

2. Not all sales slips are exactly alike. Can you tell what was bought at each sale for which you have a sales slip?

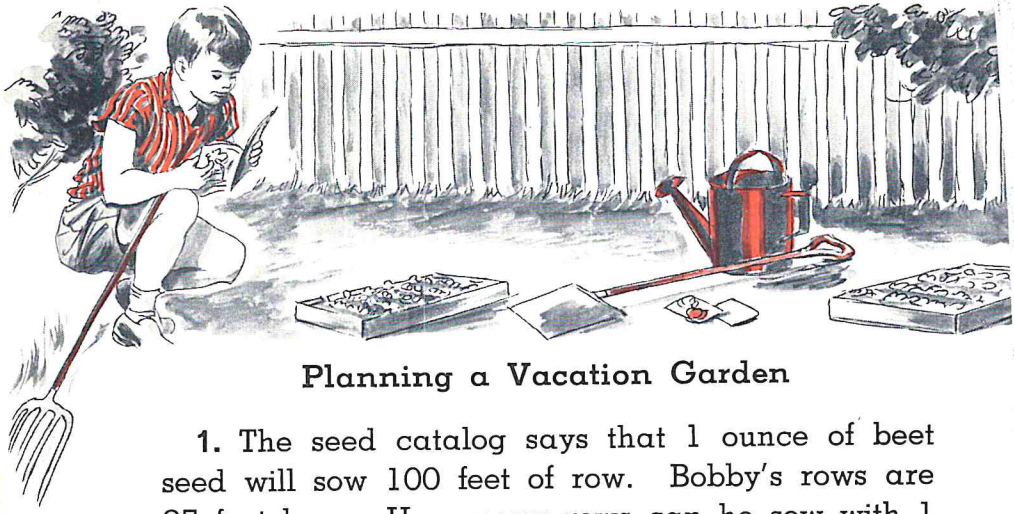
3. Make three copies of the sales slip shown on page 274. Do not fill in what Mrs. Brown bought.

4. Now make a sales slip for each of these customers:

Mrs. Jones
1121 Locust Lane
July 21, 1947
9 ears of corn at 5¢ an ear
2 lb. of steak at 45¢ a pound
5 bunches of carrots at 5¢ a bunch

Mrs. James West
1842 Lindale Avenue
July 31, 1947
$\frac{1}{4}$ lb. of tea at $.80 a pound
$\frac{1}{2}$ lb. of coffee at $.50 a pound
$\frac{1}{2}$ doz. eggs at $.44 a dozen

Mrs. Jay Mills
1411 Wildwood Terrace
August 17, 1947
$\frac{1}{2}$ lb. of butter at $.38 a pound
$\frac{1}{3}$ doz. eggs at $.42 a doz.
3 lb. of boiled ham at $.75 a pound



Planning a Vacation Garden

1. The seed catalog says that 1 ounce of beet seed will sow 100 feet of row. Bobby's rows are 25 feet long. How many rows can he sow with 1 ounce of seed?

2. Bobby believes he can grow an average of 4 beets to each foot of row. How many beets does he believe he can grow in 1 row? In two rows?

3. Beets are worth about $\frac{1}{2}¢$ each. How much will the beets that Bobby believes he can grow in 2 rows be worth?

4. Beet rows should be 18 inches apart, and the seed should be planted $\frac{1}{2}$ inch deep. Try to find a way with cardboard, sand, or something else to show these facts to the rest of the class.

5. The seed catalog says that beets will be ready to eat in 54 days after the seed is planted if the season is good. Bobby figured out that if seed were planted on May 1, he could have beets to eat on June 24. This was the way he figured. There would be 30 more days in May. (Why?) Then, it would take 24 days in June to finish out the 54 days needed for the beets to grow. (Why?)

6. The seed catalog says that 1 ounce of carrot seed will plant 100 feet of row. If the rows are 25 feet long, how many rows can Bobby plant with 1 ounce of seed?

7. If Bobby can grow an average of 5 carrots to a foot of row, how many carrots can he grow in 4 rows each 25 feet long?

8. Carrots are worth an average of about $\frac{1}{4}¢$ each. How much will all of Bobby's carrots be worth?

9. Carrot rows should be 15 inches apart, and the seed should be planted $\frac{1}{4}$ inch deep. Try to find a way to show these facts to the rest of the class.

10. The seed catalog says that carrots will be ready to eat 70 days after the seed is planted if the season is good. Bobby figured out that if seed is planted on May 10, he can have carrots to eat on July 19. This was the way he figured. There would be 21 more days in May. (Why?) There would be 30 days in June. (Why?) Then, it would take 19 days in July to finish out the 70 days needed for the carrots to grow. (Why?)

11. If the beets and the carrots are both planted on the same day, which will be ready to eat at the earlier date? How much earlier?

12. Bobby will plant onion sets 3 inches apart in a row. How many onion sets will it take for 2 rows each 25 feet long?

13. A bag of 100 onion sets costs 20¢. How much will Bobby have to pay for the sets he needs?

Thinking About the Way to Work Problems

1. If you know what a knife costs and what a kite costs, how do you find the cost of both?

2. If you know the cost of a dozen oranges, how do you find the cost of 1 orange?

3. If you know how much money you have in your pocket and know the cost of what you want to buy, how can you find how much will be left in your pocket?

4. If you know the cost of 1 pound of candy, how can you find the cost of 3 pounds?

5. You are saving for a pair of skates. If you know what they cost and if you now have 75¢ saved, how do you find how much more you need?

6. If a boy earns the same amount of money each day, except Sunday, how do you find how much he earns in a week?

7. If you know how much you pay in rent each month, how can you find how much you will pay in 1 year?

8. If you know the cost of 1 pound of black pepper, how can you find the cost of $\frac{1}{4}$ pound?

9. If you know the cost of 1 pound of red pepper, how can you find the cost of $\frac{1}{2}$ pound?

10. If you know your grade on each of four spelling tests, how can you find your average grade?

11. If you know the length of a row in feet and know that the plants will be 3 feet apart, how do you find the number of plants in a row?

Do Not Use Your Pencil

1. Mary bought a yard of lace. How many inches did she buy?

2. Mary cut the yard of lace in half. How long was each piece of lace?

3. Mother bought $\frac{1}{3}$ yard of cloth. How many inches did she buy?

4. Mother bought $1\frac{1}{3}$ yards of tablecloth. How many feet long was the piece she bought?

5. Tom bought $\frac{1}{2}$ gallon of milk. How many quarts did he buy?

6. There are $\frac{1}{2}$ dozen pencils in a box. How many pencils are there in 9 boxes?

7. Mother bought a pound bar of chocolate. She used $\frac{1}{2}$ lb. of the chocolate in some cookies. How much chocolate did she have left?

8. Mary had a dozen eggs. She used $\frac{1}{3}$ dozen in a cake. How many eggs did she have left?

9. Mother bought $\frac{1}{4}$ lb. of bacon and $\frac{3}{4}$ lb. of ham. How much meat did she buy?

10. Father bought a quart of oil for his car. How many pints did he buy?

11. Father parked his car on a parking lot. The sign said it cost 15¢ to park a half hour. Father left the car there 30 minutes. What should he pay?

12. Another parking lot charged 10¢ for each half hour. What must Father pay if he leaves the car parked for one hour?

Cowboys of the High-Grass Lands

Argentina is one of our South American neighbors. In Argentina there are many cattle and many cowboys. The plains where the cattle graze are covered with grass that is as high as a man's head.

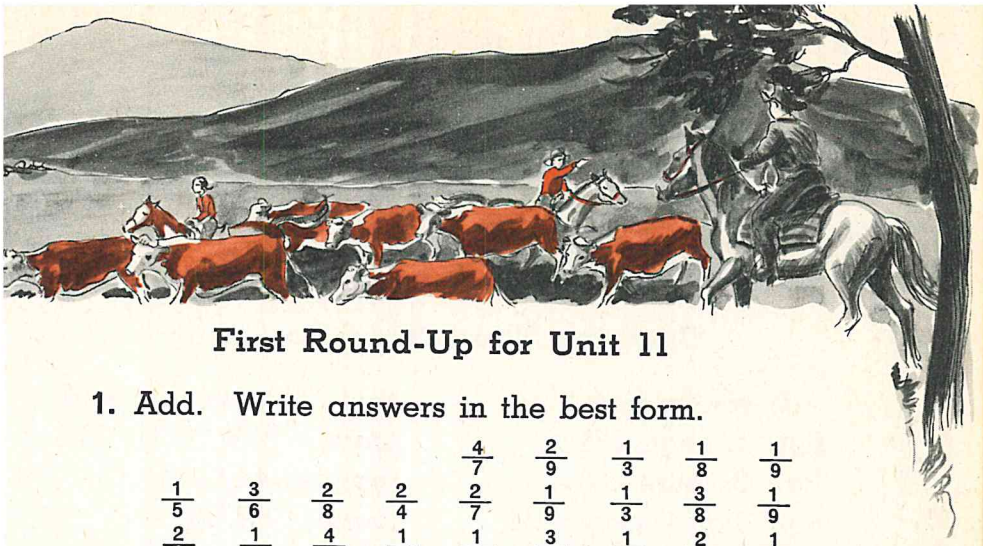
1. Some of the grass is $5\frac{1}{2}$ feet high. How many inches is that? (Find how many inches in 5 feet, then how many inches in $\frac{1}{2}$ foot. The sum of these numbers is the number of inches in $5\frac{1}{2}$ feet.)

2. Mark off $5\frac{1}{2}$ feet high on your wall. Could you get lost in grass that high?

3. Some of the grass is 72 inches high. The grass in your back yard is about $\frac{1}{3}$ foot high. How many inches higher is the pampas grass than the grass in your back yard?

4. One cowboy herds cattle on a ranch of 5,600 acres. Another cowboy herds cattle on a ranch of 10,000 acres. How much larger is the second ranch?

5. A cowboy can brand 275 cattle in one day. At that rate, how many could he brand in 4 days?



First Round-Up for Unit 11

1. Add. Write answers in the best form.

				$\frac{4}{7}$	$\frac{2}{9}$	$\frac{1}{3}$	$\frac{1}{8}$	$\frac{1}{9}$
$\frac{1}{5}$	$\frac{3}{6}$	$\frac{2}{8}$	$\frac{2}{4}$	$\frac{2}{7}$	$\frac{1}{9}$	$\frac{1}{3}$	$\frac{3}{8}$	$\frac{1}{9}$
$\frac{2}{5}$	$\frac{1}{6}$	$\frac{4}{8}$	$\frac{1}{4}$	$\frac{1}{7}$	$\frac{3}{9}$	$\frac{1}{3}$	$\frac{2}{8}$	$\frac{1}{9}$

2. Subtract. Write answers in the best form.

$\frac{3}{4}$	$\frac{7}{8}$	$\frac{2}{3}$	$\frac{4}{5}$	$\frac{9}{9}$	$\frac{5}{6}$	$\frac{3}{8}$	$\frac{7}{9}$	$\frac{3}{6}$
$\frac{1}{4}$	$\frac{5}{8}$	$\frac{1}{3}$	$\frac{2}{5}$	$\frac{6}{9}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{1}{9}$	$\frac{1}{6}$

Find the answers.

3. $\frac{1}{2}$ of 16 $\quad \frac{1}{3} \times 15 \quad \frac{1}{4} \times 428 \quad \frac{1}{5} \times 125$

4. $\frac{1}{6}$ of 372 $\quad \frac{1}{8} \times 376 \quad \frac{1}{9} \times 297 \quad \frac{1}{4} \times 848$

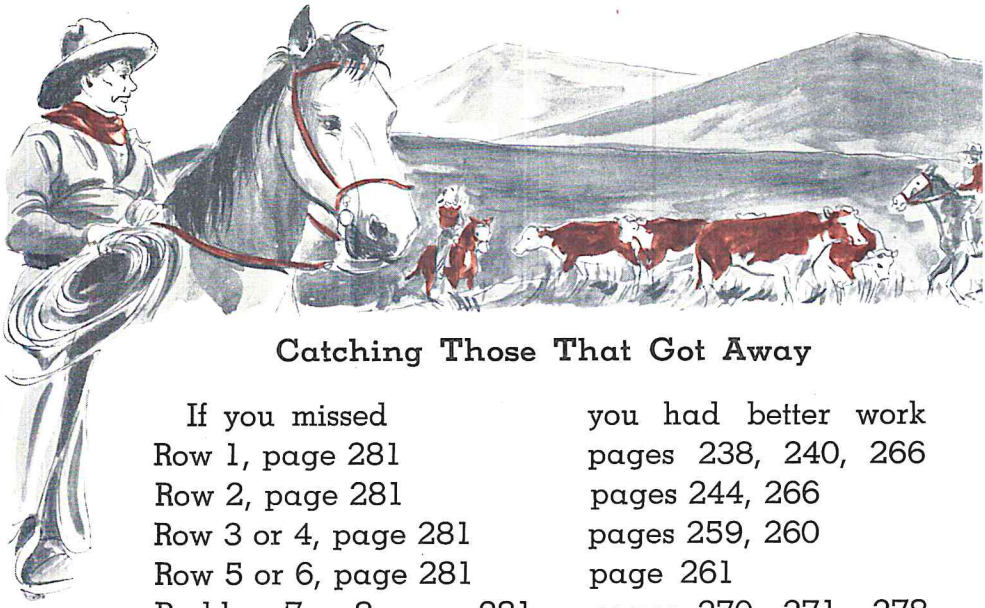
5. $\frac{2}{3}$ of 12 inches $\quad \frac{3}{4}$ of 16 ounces

6. $\frac{3}{5}$ of \$25 $\quad \frac{5}{6}$ of 1 dozen

7. If Harold walks 12 blocks each day, including Sunday, how many blocks will he walk in a week?

8. Rose practiced her violin each day in June and got 10¢ for each day that she practiced. How much did she earn?

If you missed more than 4, work on page 282. If you did not miss more than 4, work on page 283.

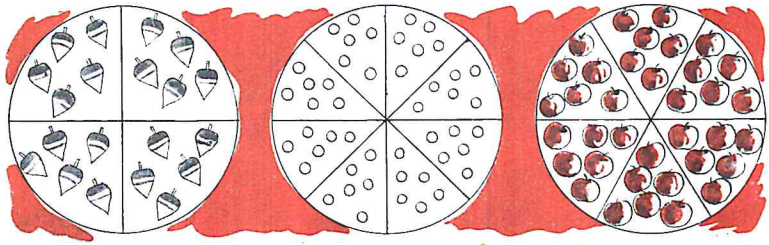


Catching Those That Got Away

If you missed	you had better work
Row 1, page 281	pages 238, 240, 266
Row 2, page 281	pages 244, 266
Row 3 or 4, page 281	pages 259, 260
Row 5 or 6, page 281	page 261
Problem 7 or 8, page 281	pages 270, 271, 278

Find the answers to these exercises by looking at the pictures at the bottom of the page.

1. $\frac{1}{4}$ of 20 tops
2. $\frac{1}{2}$ of 20 tops
3. $\frac{3}{4}$ of 20 tops
4. $\frac{1}{6}$ of 36 apples
5. $\frac{1}{3}$ of 36 apples
6. $\frac{1}{2}$ of 36 apples
7. $\frac{2}{3}$ of 36 apples
8. $\frac{5}{6}$ of 36 apples
9. $\frac{1}{8}$ of 48 marbles
10. $\frac{1}{4}$ of 48 marbles
11. $\frac{3}{8}$ of 48 marbles
12. $\frac{1}{2}$ of 48 marbles
13. $\frac{5}{8}$ of 48 marbles
14. $\frac{3}{4}$ of 48 marbles
15. $\frac{7}{8}$ of 48 marbles
16. $\frac{1}{4} + \frac{1}{4}$



Roping the Tough Ones

Mrs. Jones has decided to have a plan for spending the family's money. She made a plan at the beginning of the month. Here is how she planned to spend the money.

Mr. Jones earns $216 a month. It will take $\frac{1}{4}$ of this to pay the rent. Mrs. Jones has decided to allow $\frac{1}{3}$ of Mr. Jones' salary for groceries, $\frac{2}{9}$ for clothing, and $\frac{1}{8}$ for savings. This leaves $4 for carfare, $4.25 for gas and electricity, and $6.75 for other things.

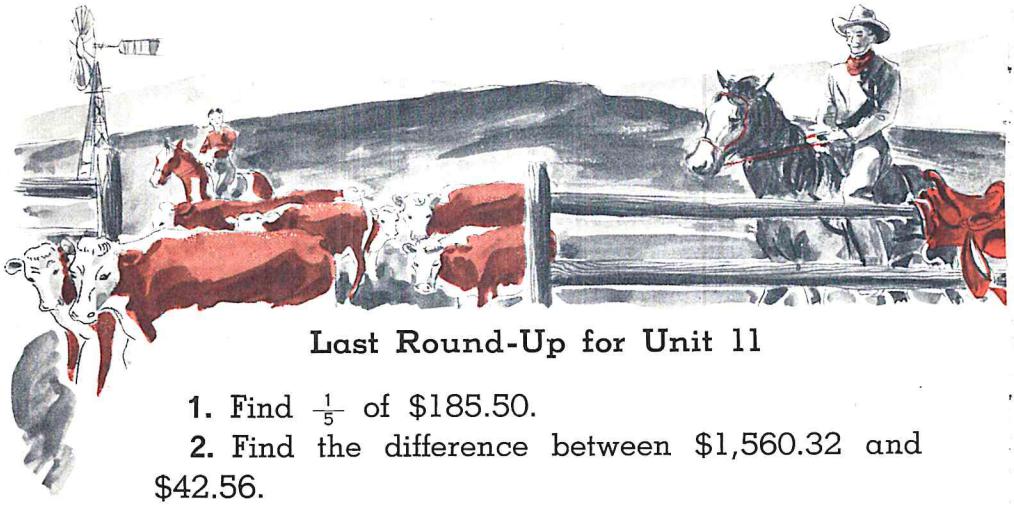
1. How many dollars has Mrs. Jones allowed for rent? For groceries? For clothing? For savings?

2. Find the sum of what is allowed for rent, groceries, clothing, savings, carfare, gas and electricity, and for other things.

3. Suppose Mr. Jones earns only $180 a month. Make a plan showing (a) what part of the salary and (b) how many dollars of the salary you would allow for different things.

4. Suppose Mr. Jones earns $252 a month. Make a plan like the one described in 3 above.

5. Paul had $350 and spent $\frac{3}{7}$ of it. How much did he spend? How much did he have left?



Last Round-Up for Unit 11

1. Find $\frac{1}{5}$ of \$185.50.

2. Find the difference between \$1,560.32 and \$42.56.

3. What is the sum of 68, 59, 4, 97, and 42?

4. How much is $\frac{3}{5}$ of \$45.30?

5. Find the product of 9 times 9463.

6. Mr. Hart made 35 trips with a fully loaded 5-ton truck. How many tons did he haul?

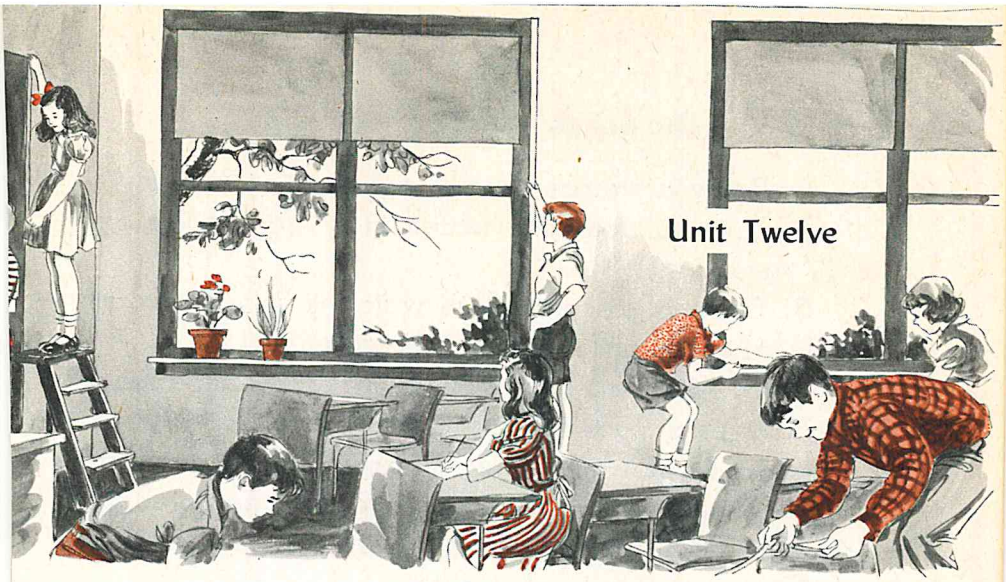
7. If a notebook has 36 sheets in it, how many sheets are needed to make 48 notebooks?

8. I earned 42 ¢ delivering magazines at 2 ¢ each. How many magazines did I deliver?

9. There are 720 pupils in the Jackson School. If $\frac{5}{8}$ of these pupils are boys, how many boys are in the school?

10. In the Jackson School, $\frac{1}{9}$ of the pupils are in the first grade and $\frac{2}{9}$ are in the second grade. How many pupils are there in the first grade? In the second grade?

11. Mr. Collins is driving 900 miles. If he drives 218 miles the first day, 325 miles the second day, and 300 miles the third day, how far does he need to drive the fourth day to finish the trip?



Learning to Measure

1. Make a foot ruler on cardboard or heavy paper. Mark it off into inches. How many inches are there in 1 foot?

2. Lay foot rulers on a yardstick. How many feet are in 1 yard?

3. There are 12 inches in a foot and 3 feet in a yard. How many inches, then, are there in a yard?

4. Name some things that you would measure in inches.

5. Name something that you buy by the foot.

6. Name something that you buy by the yard.

7. How many inches are there in $\frac{1}{2}$ foot? In $\frac{1}{3}$ foot? In $\frac{3}{4}$ foot? In $\frac{5}{6}$ foot? In $\frac{1}{9}$ yard? In $\frac{2}{3}$ yard?

12 inches (in.) = 1 foot (ft.)

36 inches = 3 feet = 1 yard (yd.)

Drawings for Your Notebook

1. Draw a square which is $\frac{1}{3}$ foot on a side.

2. Draw a notebook which is $\frac{1}{9}$ yard wide and $\frac{1}{6}$ yard long.

3. Draw a piece of cloth which is $\frac{1}{9}$ yard on one side and $\frac{1}{3}$ foot on the other side.

4. Draw a line $\frac{2}{3}$ foot long. Mark it off into inches.

Look back over the drawings you made for 1 to 4 above. Be sure they are as carefully and as neatly done as you can do them. Now exchange notebooks with a neighbor. Measure each other's drawings to be sure they are right.

Say how many inches in:

5. $\frac{1}{3}$ foot **7.** $\frac{2}{3}$ foot **9.** $\frac{3}{4}$ foot

6. $\frac{1}{9}$ yard **8.** $\frac{2}{9}$ yard **10.** $\frac{3}{4}$ yard

11. Name five different kinds of workers that have to use a foot rule or a yardstick in their work.

12. It takes $2\frac{1}{2}$ yards of dress goods to make a skirt for a woman or $1\frac{1}{2}$ yards to make a skirt for a girl. The dress goods costs 28¢ a yard.

How much will it cost to buy enough goods to make a woman's skirt? To make a girl's skirt?

13. Another kind of dress goods may be used for either an afternoon dress or an evening dress. It is 38 inches wide and costs 32¢ a yard.

It will take $3\frac{3}{4}$ yards for an afternoon dress. How much will that cost?

It will take $5\frac{3}{4}$ yards for an evening dress. How much will that cost?

Addition Review

In adding, remember:

The answer is called the sum.

Adding gives you a larger number for the answer.

Always write your figures carefully and neatly in straight columns.

Check your answer by adding in the opposite direction.

Keep cents points under each other in addition.

Copy and add. Check.

1.

						7	6	7
			3	6	9	5	2	9
4	8	7	5	3	8	6	8	5
2	7	3	6	9	5	1	0	4
3	2	5	7	6	9	8	5	7

2.

34	754	265	98	845	249	916
18	50	89	7	99	824	401

3.

46	298	194	100	432	502	199
5	27	289	298	78	4	13
125	329	9	38	138	45	327
37	485	78	9	93	1	7

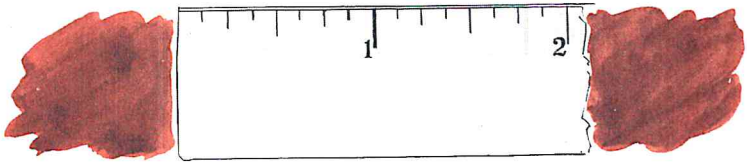
Copy in straight columns and add. Remember the cents point in writing dollars and cents.

4. $1.87, $14.01, $21.10, $4.25, $0.91

5. Four dollars and five cents, three dollars and fifteen cents, twenty-eight dollars and sixteen cents.

Looking More Carefully at the Ruler

1. This picture shows a part of a ruler. How far apart are the longest lines? How far apart are the second longest lines? What lines are one-fourth inch apart? What lines are one-eighth inch apart?



2. Use a ruler to measure these things as exactly as you can. Have a neighbor measure, too, and compare your results.

A pencil
A piece of chalk
The length of your book
The width of your book

3. Draw a line $1\frac{3}{4}$ inches long; a line $2\frac{1}{2}$ inches long; a line $3\frac{1}{4}$ inches long.

4. Draw a square $2\frac{1}{4}$ inches on a side.

5. Draw on your paper a space that is $1\frac{1}{2}$ inches wide and $2\frac{1}{2}$ inches long.

Exchange your work for 3, 4, and 5 above with a neighbor. Check each other's drawings for exact measures and careful, neat drawing.

6. Make a list of ten things that one cannot get right unless he can measure exactly. One example is fitting glass in a window frame.

7. What is the perimeter (distance around) the square you drew in 4 above? Of the space you drew in 5?

Subtraction Review

In subtracting, remember:

The answer is the difference or remainder.

Subtraction gives you a smaller number for an answer.

Check your answers by adding the difference to the bottom number. This gives you the top number.

In subtraction, always keep the cents points directly under each other.

Copy neatly and subtract.

1.	14	13	11	15	12	11	10
	8	4	3	6	4	2	4
2.	16	17	12	11	10	15	13
	7	8	3	4	2	9	6
3.	54	38	84	87	45	89	76
	22	26	62	85	39	86	42
4.	683	954	939	698	864	753	
	401	636	924	420	107	578	
5.	2035	4067	1000	4079	3609	5601	
	1940	3005	909	89	106	604	
6.	$5.67	$8.14	$5.45	$4.05	$1.01		
	2.25	4.52	3.50	.98	.85		

7. Subtract $4.25 from $49.50.

Multiplication Review

In multiplying, remember:

The answer is the product.

Check by changing the places of the two numbers and multiplying again, or by covering the multiplication and doing the work a second time.

In multiplying money numbers, put the cents point in the products to show cents. Write the dollar sign in front of such products.

1. If my electric bill averages $3.35 a month, what would I pay in 12 months?

2. If your rent is $37.50 a month, what is it for a year?

3. If a bus averages 37 miles an hour, how far can it travel in a day? (How many hours in a day?)

4. There are 150 yards of gummed paper in a roll. How many yards are there in a dozen rolls?

5. What would you get for 35 bushels of tomatoes at $3.25 a bushel?

6. How many feet of copper wire are there in a roll containing 960 yards?

Multiply. Check by going over the work.

7.	$4.12 35	$7.30 48	$9.10 32	$41.65 66	$63.45 95
8.	$6.78 24	$2.76 37	$9.45 43	$35.47 74	$23.19 91

Review of Problem Solving

In solving problems, remember:

Read the problem carefully to find what it is about.

Look carefully to find what the problem wants you to answer.

Find what the problem gives you to help you find the answer.

Decide whether you can work the problem in one step, or whether it will take more steps.

Decide what to do first: add, subtract, multiply, or divide.

If there is more than one step, decide what to do in the second step.

Now work the problem.

Look carefully at the answer to see if it seems all right.

1. Lon's father bought 6 gallons of gasoline at 22¢ a gallon. What was the cost?

2. At another time he bought 6 gallons of gasoline at 24¢ a gallon and gave the filling station man $2. How much change should he get back?

3. Later he bought 10 gallons of gasoline at 21¢ a gallon and 6 quarts of oil at 15¢ a quart. What was the total cost?

4. At a hotel, he paid $1.75 for dinner, $2.25 for a room, $1.35 for breakfast, and 60 cents for some fruit to take along. What was the total cost?

Looking at the Answer a Second Time

You may find an answer that is silly, yet hand it in as right. You do this because you do not look at the answer and ask yourself, "Does this answer make sense?"

Which of the answers below do make sense?

1. Bob weighed all the boys in his room and found their average weight to be 1,835 pounds.

2. Gus makes from 50 cents to 60 cents a day selling papers. His sister added up his earnings for a week, and said he had made $380. Later she said it might be $38.

3. Alice said that $\frac{2}{3}$ of a yard is 8 inches.

4. Bus fare is 3 cents a mile. Sue said it would cost $7.50 to go 25 miles.

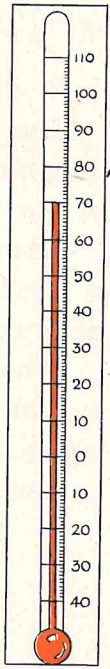
5. A 16-pound turkey at 35 cents a pound will cost $2.10.

6. Mr. Hill was making a long trip in his car. He drove four days at an average rate of 32 miles an hour. He was on the road about 10 hours each day. Mrs. Hill was not sure how far they had gone, but thought it must have been about 3500 miles.

7. Tony sells papers to get money to buy his own clothes. Tony always gets sensible answers.

Tony bought 2 pairs of pants, 4 shirts, 2 pairs of shoes, 2 suits of underwear, 6 pairs of socks in one year. Which of these amounts do you think Tony got for an answer? $1.28? $4? $9.30? $32.50? $158?

Measuring Temperature

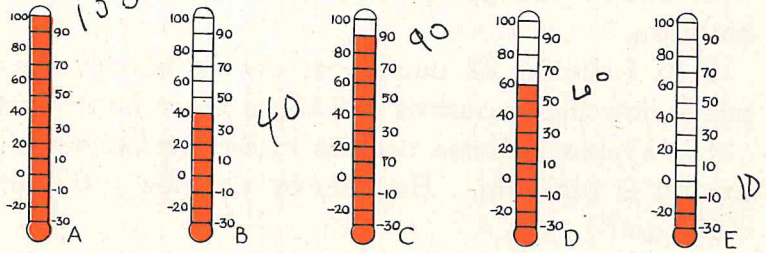


Measuring temperature means finding how hot or how cold something is. Temperature is measured in degrees by the use of a thermometer.

The thermometer pictured at the right is marked off into numbered spaces, with each numbered space marked into smaller spaces. This thermometer shows the temperature to be 70 degrees.

Water freezes at 32 degrees and boils at 212 degrees. When the temperature is 0 degrees or below, the weather is very cold. A comfortable room temperature is about 70 degrees; during the summer the temperature may be 90 degrees or 100 degrees or a little more. That is too hot to be comfortable.

Read the thermometers below. Do you think thermometer A has been in the shade or in the sun? B has been in hot water or cold water? Where do you think thermometers C, D, and E may have been, and what is the time of year?



Division Review

In dividing, remember:

The number to be divided is the dividend, the number you divide by is the divisor, and the answer is the quotient.

Check division by multiplying the quotient by the divisor. Add the remainder to this product if there is a remainder.

When the dividend is a money number, be sure to put the cents point correctly in the quotient and put the dollar sign in front of the quotient.

Divide and check.

1. $7\overline{)630}$ $6\overline{)396}$ $6\overline{)560}$ $7\overline{)152}$ $4\overline{)3056}$

2. $9\overline{)729}$ $3\overline{)174}$ $9\overline{)909}$ $6\overline{)248}$ $8\overline{)9000}$

3. $8\overline{)664}$ $5\overline{)285}$ $7\overline{)700}$ $8\overline{)171}$ $6\overline{)2076}$

4. $3\overline{)\$3.36}$ $7\overline{)\$1.54}$ $8\overline{)\$2.40}$ $5\overline{)\$15.05}$ $9\overline{)\$80.10}$

Write the answers.

5. $\frac{1}{2}$ of 16 $\frac{1}{3}\times 12$ $\frac{1}{4}\times 20$ $\frac{1}{5}\times 30$

6. $\frac{1}{3}$ of 21 $\frac{1}{2}\times 10$ $\frac{3}{4}\times 20$ $\frac{2}{3}\times 12$

7. Divide $2.52 equally among 6 children.

8. Divide 138 pieces of paper equally among 6 children.

9. If I divide 72 ounces of candy into 9 equal parts, how many ounces will there be in each part?

10. I have 3 dozen cookies to be divided equally among 9 children. How many cookies will each child get?

Game: Choose the Right Answer

Say or write the word or number in parentheses which is the right one.

1. There are (12, 24, 60) hours in a day.

2. There are (12, 2000, 16) ounces in a pound.

3. Liquid measures may be used for (vegetables, milk, butter).

4. There are (36, 12, 16) inches in a yard.

5. A 10-year-old child should weigh about (80, 200, 350) pounds.

6. Three-fourths dozen pencils is (exactly, more than, less than) 8 pencils.

7. Six inches are (exactly, more than, less than) $\frac{1}{2}$ foot.

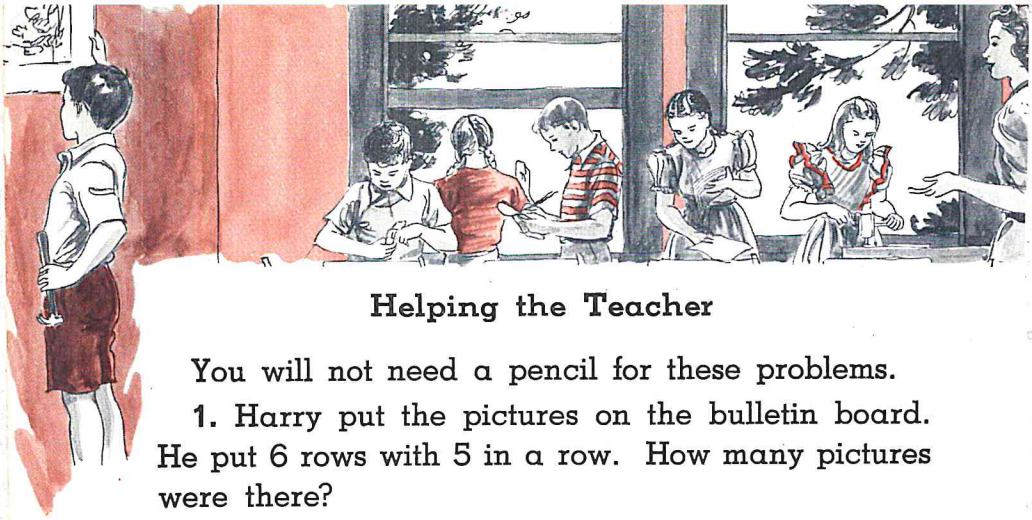
8. Coal is usually bought by the (ounce, peck, ton).

9. Dress goods is usually bought by the (inch, foot, yard).

10. Two quarts of milk equals (2 pints, 1 gallon, $\frac{1}{2}$ gallon).

Tell what number in the second column matches each number in the first column.

11. $\frac{1}{2}$ yard	a. 1 peck
12. $\frac{1}{3}$ foot	b. 18 inches
13. $\frac{1}{2}$ foot	c. 8 ounces
14. $\frac{1}{2}$ quart	d. 144 things
15. $\frac{1}{4}$ bushel	e. 1 pint
16. 1 gross	f. 4 inches
17. $\frac{1}{2}$ pound	g. 6 inches



Helping the Teacher

You will not need a pencil for these problems.

1. Harry put the pictures on the bulletin board. He put 6 rows with 5 in a row. How many pictures were there?

2. There were 4 rows of pictures on another bulletin board, with 24 pictures in all. How many were there in a row?

3. The teacher had 6 dozen new pencils and asked Jean to sharpen $\frac{1}{2}$ of them. How many pencils would Jean sharpen?

4. The teacher asked Marie to put 3 sheets of paper on each desk. There are 48 desks. How many sheets of paper should Marie have left if the teacher gave her 200 sheets?

5. Mary cleaned 12 erasers, Joe cleaned 15, and there were 2 that did not need cleaning. How many erasers were there in all?

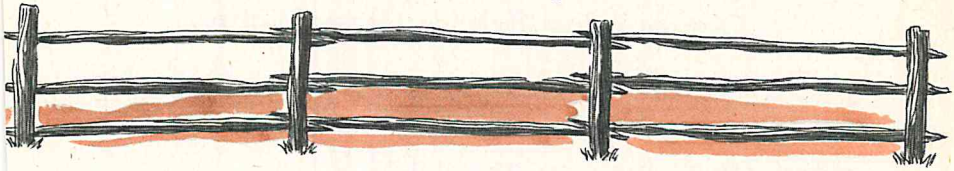
6. The chalk box was half full. On the outside was printed "1 gross." How many pieces of chalk were left in the box?

7. Tom counted 64 crayons in a box. If $\frac{1}{8}$ of them were red, $\frac{1}{4}$ blue, $\frac{3}{8}$ yellow, and $\frac{1}{4}$ green; how many were there of each color?

Tricky Problems

You had better draw a picture for the problem before you start to add, subtract, multiply, or divide.

1. A picture already is drawn for this problem. The fence is 36 feet long. How many posts are there? How far is it from one post to the next one?



2. A carpenter wants to saw a 10-foot board into 2-foot pieces. How many times will he have to saw it?

3. How many buttons are there in a row 6 inches long, if the buttons are sewed 2 inches apart?

4. I have a sheet of heavy paper 12 inches long and 9 inches wide. What is the greatest number of cards each 3 inches long and 2 inches wide that I can cut from the big sheet?

5. Harry has three pieces of heavy string that he wishes to tie together to make one long piece. One piece is 9 feet long, another is 7 feet, and the third is 12 feet. It takes $\frac{1}{2}$ foot of string to make a knot. How long will the string be when tied together?

6. How long is a fence if it has 8 posts 8 feet apart?

7. Helen sewed 16 buttons 1 inch apart in a straight line on her dress. How far is it from the first button to the last one?

Our Sunday School Class Picnic

1. There are 40 children in all in the class, but only $\frac{4}{5}$ of them could come to the picnic. How many have come to the picnic?

2. The class chose a picnic committee. The committee asked each child to bring 35 cents to pay for food and other things. If each of the 32 children who came remembered to bring the 35 cents, how much money would the committee have?

3. They planned that each child should have 3 sandwiches. How many pieces of bread will be needed for all the sandwiches?

4. The committee bought 15 loaves of bread. If each loaf makes 16 slices, how many slices will there be? How many sandwiches would these make?

5. They decided not to use the crusts in making sandwiches. How many other slices of bread would there be in all? How many sandwiches would these make?

6. They made exactly 105 sandwiches. Of these $\frac{3}{7}$ were ham, $\frac{1}{3}$ were jelly, and the rest were peanut butter. How many of each kind did they make?

7. The picnic committee bought apples at the rate of 4 pounds for 25 cents. How many pounds of apples did they get for $1.50?

8. If there is an average of 3 apples to the pound, how many apples did they get for $1.50? Will this be enough for 2 apples for each child?

9. They bought a dozen and a half eggs for stuffed eggs. Was this enough that each child could have one-half egg?

10. The teacher brought 4 dozen chocolate bars as a present. How many did she have left after she had given 1 bar to each child?

11. Five boys went riding in a rowboat. If the cost was 40 cents, how much should each boy pay?

12. The man at the pony track said rides were 5¢ each or 6 for a quarter. Bobby will ride as many times as he can for 25¢. Should he pay 5¢ for each ride, or buy tickets for 6 rides?

13. Tommy bought three ice cream cones at 5 cents each and 2 bags of popcorn for 15 cents. How much did he spend?

14. Edward threw a ball 63 yards. How many feet was this?

Save Trash for Cash

1. There are 24 rooms in the Wilson School. If 3 pounds of waste paper can be saved in each room each school day, how many pounds of waste paper can be saved in the whole school in a week?

2. If this waste paper can be sold for 40 cents a hundred pounds, for how much can 300 pounds be sold? For how much can 400 pounds be sold?

3. There is an average of 48 pupils to a room in the Wilson School. How many pupils are there in the whole school?

4. If each child brings one pound of newspaper each week, how much can they collect each week?

5. Old newspapers can be sold for 60 cents a hundred pounds. For how much could 1100 pounds be sold? For how much could 1200 pounds be sold?

6. It takes about 46 sheets of old newspaper to make a pound. Do you think the children can bring in an average of a pound for every child each week? Give good reasons for your answer. (How many sheets in a newspaper? Do all families have daily newspapers? Some families have several children in school. Some families may have stacks of old paper they want to get rid of.)

7. Magazines usually weigh from one-half pound to a pound. Do you think the pupils of Wilson School could bring in 100 pounds of magazines a week? How much could they get for these at 75 cents a hundred pounds?

Using Cash from Trash for School

1. A handsaw will cost $3.60. Jack said 900 pounds of waste paper or 600 pounds of old newspaper would pay for it. Was he right?

2. Thirty pounds of waste paper can be packed in a bag. Jack said the saw would cost 30 bags of waste paper. Was he right?

3. A claw hammer costs $1.20. How much waste paper will it take to pay for a claw hammer? How much old newspaper would it take?

4. A smoothing plane costs $3.75. How many pounds of old magazines would it take to buy one?

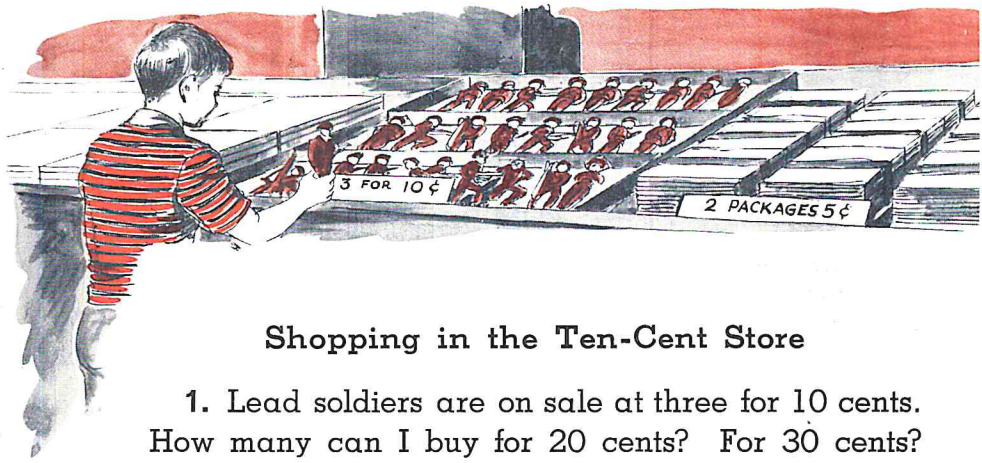
5. Jack said a tool box costs 100 pounds of waste paper, 100 pounds of newspaper, and 200 pounds of magazines. How much was this in money?

6. A second grade room needs 30 readers that will cost 50 cents each. How much will they all cost?

7. Jack says the school can buy the readers with 2000 pounds of old magazines. Is he right?

8. The upper-grade boys can make a book case for the readers. The lumber, nails, and paint would cost $2.15. Jack says this can be bought with 200 pounds of waste paper, 100 pounds of old newspapers, and 100 pounds of old magazines. Check to see whether he is right.

9. The first-grade room needs a bookcase. The material to make one will cost $1.95. Pretend that you are Jack, and tell us how much waste paper is needed to buy the bookcase.



Shopping in the Ten-Cent Store

1. Lead soldiers are on sale at three for 10 cents. How many can I buy for 20 cents? For 30 cents?

2. Paper napkins are on sale at 2 packages for 5 cents. How many packages can I get for 10 cents? For 25 cents?

3. Candy drops sell at four for 1 cent. How many can I get for a nickel?

4. Small candy bars sell at two for 1 cent. How many can I get for 3 cents? For 5 cents?

5. There are some pencils at three for 5 cents. How many of these can I buy for a dime?

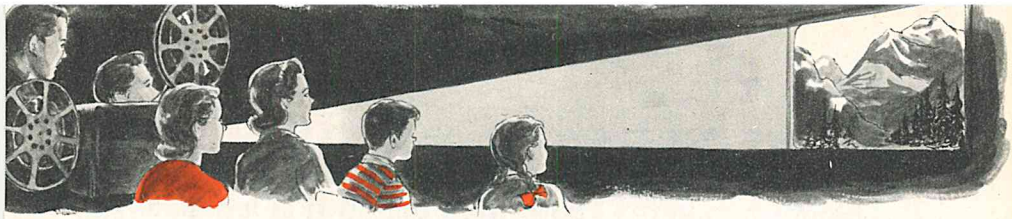
6. There are other pencils at three for 10 cents. How many of these can I buy for 20 cents?

7. There are still other pencils at six for 25 cents. How many of these can I buy for $1?

8. Big tablets are two for 15 cents. How many can I buy for 30 cents?

9. Middle-size tablets are four for 25 cents. How many of these can one buy for 50 cents?

10. Small tablets are two for 9 cents. How many can one buy for 45 cents?



A Quick Movie of Fourth Grade Arithmetic

The Millers invited us to see the moving pictures they had made on a trip through the Rocky Mountains to Alaska. We learned about mountains, wild animals, and Eskimos from seeing the pictures.

We learned from a picture we saw in school, too. This picture showed a plant growing up. Plants grow so slowly that one cannot see any change from minute to minute. The picture, though, was made so that we could see in a few minutes how the plant would grow for many weeks.

The fourth grade is almost finished. Would it not be nice to make a sort of movie of our trip through this little part of Numberland? You have learned many facts since you entered fourth grade. Would it not be a good idea if this, too, could be shown in a sort of movie? Your father and mother would like to see the sort of work with numbers that you have done and to see how much you have grown.

The Millers could not show in their pictures everything they saw. We cannot show all we learned. We can pick out a few things and show how much better we are now than we were when we entered fourth grade.

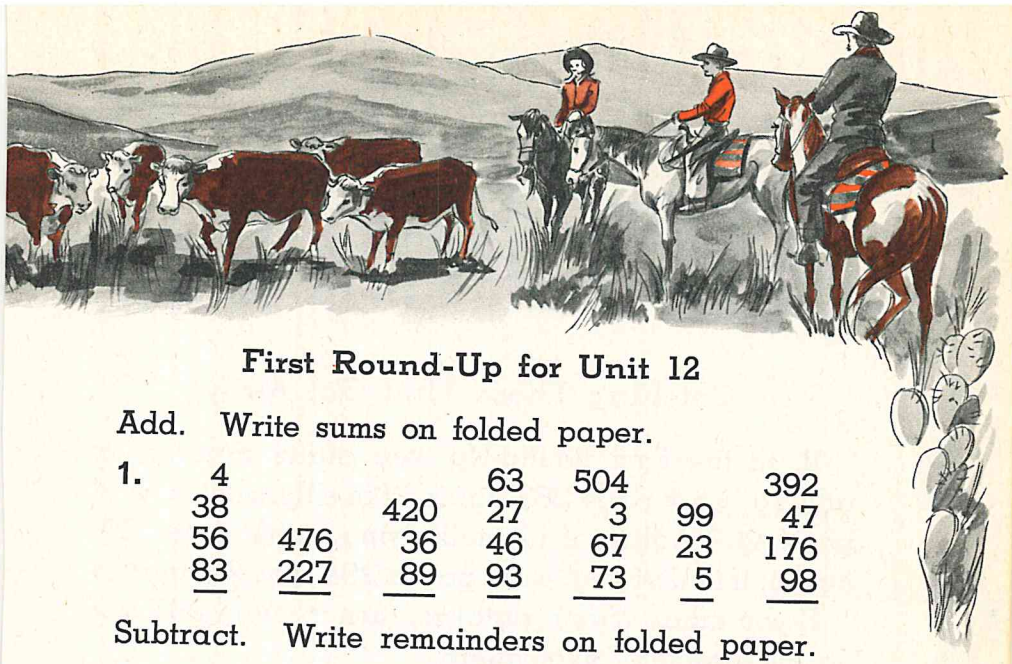
Let us look at addition. On page 6, you learned some easy addition facts. On page 7, you added bigger numbers. There were only two numbers to be added, and there was no carrying. On page 11, you learned to add more than two numbers. It was not till page 16 that you learned to add and carry. Such work was hard then, but it is simple and easy now. That is because you have practiced regularly. This is the kind of adding you can do now.

8	6	34	57	483	671	8610
7	5	9	33	26	100	344
1	0	45	7	43	98	47
6	4	69	6	38	432	5510
7	8	7	44	543	47	569

On pages 30 and 31 you had the subtraction facts. You used these on pages 33 and 34 in easy subtraction problems. There was no borrowing. On page 38, you learned to borrow in subtraction, using ghost numbers. Do you remember? On page 41, you learned to borrow twice. This, too, was hard in the beginning. You have practiced and it is now easy.

32	413	501	620	41	500	6,010
27	109	215	346	9	56	2,101

You knew almost nothing about multiplication and division of whole numbers, and you knew even less about fractions when you began fourth grade. You can now do hard multiplications, can divide by any one-figure number, and can add and subtract easy fractions.



First Round-Up for Unit 12

Add. Write sums on folded paper.

1.

4			63	504		392
38		420	27	3	99	47
56	476	36	46	67	23	176
83	227	89	93	73	5	98

Subtract. Write remainders on folded paper.

2.

405	53	534	670	373	954	504
182	46	128	368	8	385	149

Multiply. Write products on folded paper.

3.

57	704	986	92	563	380	706
5	8	9	6	7	4	3

Copy neatly in columns and add.

4. 46, 283, 20, 16 **5.** 81, 422, 713, 4

Copy neatly and subtract.

6. 384 from 726 **7.** 208 from 504

Write the answers.

8. $\frac{2}{3}\times 12$ $\frac{3}{4}\times 24$ $\frac{1}{6}\times 492$ $\frac{1}{8}\times 792$

If you missed more than four, work on page 306.
If you did not miss more than four, work on page 307.

Catching Those That Got Away

If, in the First Round-Up, you made mistakes in adding, work page 287 again; if in subtracting, work page 289 again; if in multiplying, work page 290 again; if in dividing, work pages 294 and 295 again.

If you made many mistakes, turn to page 291 and do the practice given there.

You are getting ready for the last Round-Up of the fourth grade. After you have practiced on the back pages, try page 305 again.

Add. Write the answers in best form.

1.

$\frac{1}{6}$	$\frac{2}{5}$	$\frac{3}{9}$	$\frac{1}{4}$	$\frac{2}{8}$	$\frac{2}{6}$	$\frac{1}{8}$	$\frac{1}{7}$
$\frac{1}{6}$	$\frac{2}{5}$	$\frac{1}{9}$	$\frac{1}{4}$	$\frac{1}{8}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{4}{7}$
$\frac{1}{6}$	$\frac{1}{5}$	$\frac{2}{9}$	$\frac{2}{4}$	$\frac{3}{8}$	$\frac{1}{6}$	$\frac{2}{8}$	$\frac{2}{7}$

Subtract. Write the answers in best form.

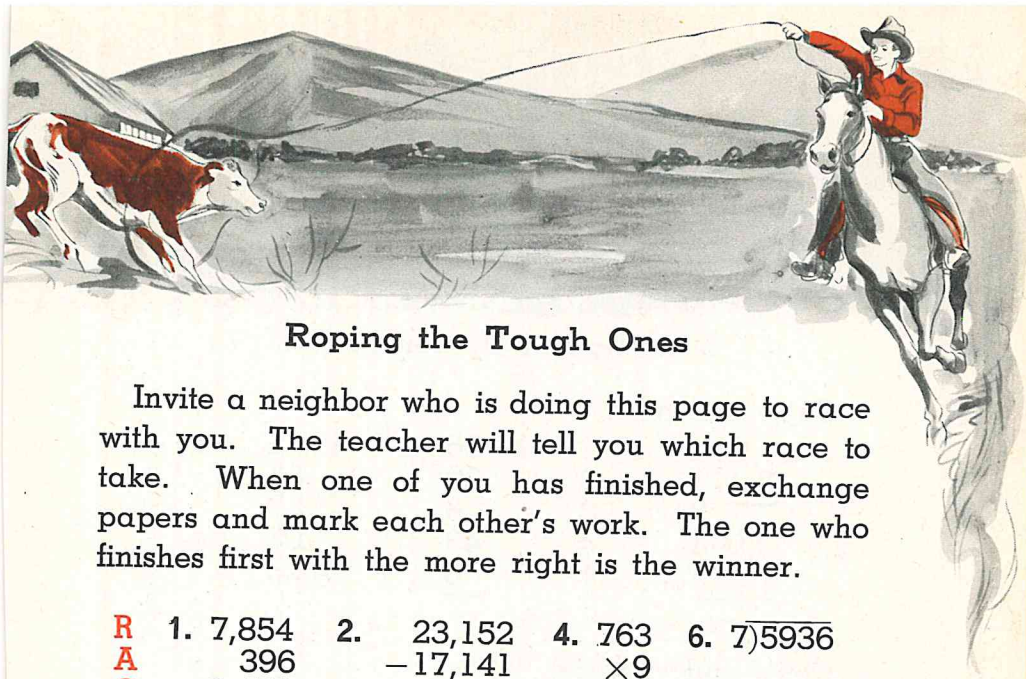
2.

$\frac{5}{6}$	$\frac{3}{4}$	$\frac{4}{6}$	$\frac{7}{8}$	$\frac{8}{9}$	$\frac{3}{6}$	$\frac{5}{9}$	$\frac{6}{8}$
$\frac{1}{6}$	$\frac{1}{4}$	$\frac{1}{6}$	$\frac{1}{8}$	$\frac{2}{9}$	$\frac{1}{6}$	$\frac{2}{9}$	$\frac{2}{8}$

Write the answers.

3. $\frac{1}{4}$ of 256 $\quad \frac{1}{3} \times 702 \quad \frac{1}{9} \times 171 \quad \frac{1}{7} \times 343$

4. $\frac{2}{3}$ of 612 $\quad \frac{3}{5} \times 645 \quad \frac{5}{6} \times 432 \quad \frac{5}{8} \times 512$



Roping the Tough Ones

Invite a neighbor who is doing this page to race with you. The teacher will tell you which race to take. When one of you has finished, exchange papers and mark each other's work. The one who finishes first with the more right is the winner.

RACE I

1. 7,854 + 396 + 3,473 + 5,211 + 1,537
2. 23,152 − 17,141
3. 41,243 − 14,562
4. 763 × 9
5. 247 × 24
6. $7\overline{)5936}$
7. $\frac{1}{4} \times 336$

RACE II

1. 3,340 + 1,562 + 831 + 2,046 + 7,504
2. 51,042 − 16,051
3. 73,050 − 47,091
4. 846 × 6
5. 308 × 37
6. $9\overline{)7587}$
7. $\frac{5}{8} \times 6512$

RACE III

1. 551 + 8,428 + 39 + 592 + 7,631
2. 39,001 − 24,012
3. 83,010 − 56,107
4. 935 × 8
5. 750 × 49
6. $6\overline{)5364}$
7. $\frac{3}{5} \times 3845$

Last Round-Up for Unit 12

Copy and add.

1. 5,634 + 2,345

2. 9,964 + 1,879

3. 7 + 8 + 0 + 4 + 1

4. 56 + 39 + 6 + 43 + 8

5. \$5.42 + .85 + 1.47 + .08 + 6.25

6. $\frac{1}{6} + \frac{2}{6}$

7. $\frac{5}{8} + \frac{1}{8}$

Copy and subtract.

8. 8,674 − 3,153

9. 4,503 − 2,894

10. \$18.63 − 8.95

11. $\frac{5}{8} - \frac{1}{8}$

12. $\frac{5}{9} - \frac{2}{9}$

Copy and multiply.

13. 738×4

14. 76×49

15. 907×58

16. $\$1.85 \times 7$

17. $\$3.49 \times 36$

Copy and divide.

18. $8\overline{)5976}$

19. $7\overline{)4431}$

20. $9\overline{)7731}$

21. $6\overline{)4374}$

Copy and find the answers.

22. $\frac{1}{4} \times 728$

23. $\frac{1}{5} \times 805$

24. $\frac{2}{3} \times 132$

25. $\frac{5}{8} \times 552$

26. Divide 15 sandwiches equally among 6 children. Show by a picture the part that 1 child gets.

27. Divide 15 sticks of candy equally among 4 children.

Pages 309 to 312 (Index),
back cover not required